#### Bypassing the "16 Mode Scan Limit" on a Motorola Spectra Radio

#### Found by: linkinpark9812

#### This Guide Written by: linkinpark9812



### Go from this:

Civ D:V	RSS\SPECTRA.E	XE							- 🗆 🗙
MOTO SPEC Page CHG/	ROLA Radio TRA = Ø1 of Ø VIEW:RADIO	Service S Model: T8 5 :ZONE_N:SC	oftwar 3GXA7H AN LIS	е А9АК Т	Use Up Or Use SCAN LIS Entry J	<mark>/ Down</mark> PgUp / T Full. Trst.	Arrows 1 ' PgDn To Must De	lo Select View Mo lete Oth	re. er
Zon #XX 1 2 3 4 5 6 7 8 9 10	e 01 NAME (SELMOD) MODE 1 MODE 3 MODE 3 MODE 3 MODE 5 MODE 5 MODE 5 MODE 6 MODE 7 MODE 8 MODE 9 MODE 10	TYPE N Pri N Pri 2 Pri 2 Pri 3 N Pri N Pri N Pri N Pri N Pri N Pri	11 12 13 14 15 16 17 18 19 20 21	PRI TLKO MUNSTER MUNSTER MUNSTER UARIOUS UARIOS UARIOS H MUNSTER LOWELL P LOWELL P LOWELL P LOWELL P LOWELL P	GROUP SC CH2 N Pr FD N Pr FD N Pr FD N Pr FD N Pr FD N Pr D D D PD	N LIST 22 23 24 25 25 26 27 28 29 30 31 32	List = LKE CNI LK CNTS LK CNTS LKCNTY PROMPT PROMPT PROMPT ILEEN/I IFRN IN STAI	= 16 of 1 Y F2 Y SH# Y OC# FAIR CH1 CH2# M-C# TRAN SPRN TE/PT	6 Max
F1 HELP	F2 GOTO ZONE	F3 PREVIOUS ZONE	F4 NEXT ZONE	F5 PRINT SCREEN	F6	F7 ERASE LIST	F8	F9	F10 EXIT

# To this!!!

av D:	RSSISPECT	RA.E.	XE								- U
MOTO SPEC Page CHG/	ROLA Ra TRA = 01 o VIEW:RA	dio f Ø DIO	Service S Model: T8 ZONE_N:SC	oftwar 3GXA7H AN LIS	е Ауак Т	Use Or	Up / Use	/ Down PgUp /	Arrows T PgDn To	o Select View Mo	;, )re.
Zon	e 01				PRI TLK	GROUP	SCAL	N LIST	List =	= 24 of :	L6 Max
#	NAME		TYPE					1.12	harm		
XX	<selm0< td=""><td>D&gt;</td><td>N Pri</td><td>11</td><td>MUNSTER I</td><td>PD N</td><td>Pri</td><td>22</td><td>LKE CNI</td><td>Y F2</td><td></td></selm0<>	D>	N Pri	11	MUNSTER I	PD N	Pri	22	LKE CNI	Y F2	
1	MODE	1	N Pri	12	MUNSTER (	CH2 N	Pri	23	LK CNTY	SH# N 1	Pri
2	MODE	Z	N Pri	13	MUNSIER H	D N	Pri	24	LK CNIY	UCH	
3	MODE	3	N PP1	12	MUNSIER I	GW N	PP1	25	DRONDT	FHIR	
2	MODE	- 2	N Pri	12	UNDING U		FFI	<b>59</b>	PROMPT	CH2# N 1	David
č	MODE	š	N Pai	15	MUNCTER	011		28	PROMPT	M-CH N	Pai
2	MODE	ž	N Poi	18	MUNSTER I	NP N	Pri	29	PROMPT	TRAN	
8	MODE	8	N Pri	19	LOWELL PI	) N	Pri	30	ILEEN/1	SPRN	
9	MODE	9	N Pri	20	LOWELL FI	) N	Pri	31	I FERN	NJ	Pri
10	MODE	10	N Pri	21	LKE CNTY	PD N	Pri	32	IN STAT	E/PT	
F1	F2		F3	F4	F5	F6		F7	F8	F9	F10
ELP	GOTO		PREUIOUS	NEXT	PRINT			ERASE			EXI

Guide created by: linkinpark9812

Yes! It has finally been done! I was very surprised that it was easier than I thought it would be. Doing this is pretty much flawless, but there are some setbacks with front end programming of the scan lists for the zones you exceed the 16 limit on. I have not tried this with mode based scan list, but I would assume they are the same. This tutorial is just going to talk about zone based scan lists.

First, my idea came about when kc7gr posted on the Bat labs forums about exceeding the mode limit from 128. He found a bit that you could bit bang and increase the amount. However, it hit a dead end due to the space limitations of the 28C64 chip on the MLM that stores the whole code plug. Then tvsjr mentioned that he got a Spectra Radio to scan more than 16 modes. He posted and said that something happened that caused one of his zones to show "17 of 16 Max" for his scan list items. He was then able to select as many items as he wanted. However when going below 16, you couldn't go back.

Well, surprisingly enough, one of my zone scan lists did the same thing. I am not sure when it happened, but this allowed me to play around with the code plug and I saw how the RSS handles that number that determines how many modes are selected. I found out that the RSS does NOT do a calculation in comparing the selected modes to scan vs. the maximum 16 (which is a STATIC value that is hardcoded into the RSS). It DOES do a calculation in determining how many modes are selected though. The RSS will see how many modes are selected to scan and put in a value, such as 15. However, when determining if you can add more, it seems to just compare.

The program seems to just look at the value of the selected modes to scan. If you try to add more, it checks to see if it EQUALS 16. If it doesn't, it lets you add more. If it DOES, then it gives you the error about the limit being reached. If it did an actual calculation, this memory "hack" probably would not work. You could put 17 in, but if the RSS did the calculation and found out you are AT 16 OR OVER, then you would get an error. But since the RSS just checks to see if it EQUALS 16, then this memory "hack" works, because if you enter the value of 17, every time you add a mode to the scan list, that number will go higher but will NEVER HIT 16 again, and the RSS just thinks that you haven't reached the limit yet!

However, unfortunately, the Radio's Firmware is smarter (at least 6.15 is. That is what I have). This limits, but does not completely eliminate, front end programming of scan lists for the zones that you have exceeded the 16 mode scan limit. Read on!!!

### Pretty neat how it all works! ©

## Ok, so let's get to it!

Ok, so here is the deal. With my method, this has to be done on a Windows machine (which makes it easier anyways). The latest RSS for the Motorola Spectra runs on my 1.6GHz Celeron M processor just fine. Just don't do any programming/reading on the radio in Windows!!!!!

First, you are going to need to get the RSS running on your Windows PC. Copy it from your DOS PC using a floppy or whatever.

Then, you need to get the code plug that you wish to edit. I assume it is on your DOS PC, so copy it over to a windows PC to be edited on.

Then, you are going to need to get this program. This is the memory editor I used to do the job. When I was thinking about changing the RSS scan limit, this program came to mind, because I used the same method to cheat money in games! I know, I shouldn't! <sup>(2)</sup>

Here is the link to Art Money: <u>http://www.systemsoftlab.com/artmoney731eng.exe</u>

Install it.

Now, open up your RSS, load your code plug, and go to one of the scan lists that you want to expand. I am going to assume you are already maxed out at 16, since you want to expand it.

D:\RSS\SPECTRA.EXE			- 🗆 ×
MOTOROLA Radio Service Softwar SPECTRA Model: T83GXA7H Page = 01 of 05 CHG/VIEW:RADIO:ZONE_N:SCAN LIS	e Use Up A9AK Or Use T	/ Down Arrows PgUp / PgDn 1	To Select, To View More.
Zone 01 # NAME TYPE XX (SELMOD) N Pri 11 1 MODE 1 N Pri 12 2 MODE 2 N Pri 13 3 MODE 3 N Pri 14 4 MODE 4 N Pri 15 5 MODE 5 N Pri 16 6 MODE 6 N Pri 17 7 MODE 7 N Pri 18 8 MODE 8 N Pri 19 9 MODE 9 N Pri 20 10 MODE 10 N Pri 21	PRI TLKGROUP SCA MUNSTER PD N Pri MUNSTER CH2 N Pri MUNSTER FD N Pri MUNSTER FGW N Pri VARIOUS FD N Pri VARIOUS FD N Pri UARIOS HOSP MUNSTER INP LOWELL PD LOWELL FD LOWELL FD LKE CNTY PD	List N LIST 22 LKE CH 23 LK CN 24 LK CN 25 LKCNT 26 PROMP 27 PROMP 28 PROMP 29 PROMP 30 ILEEN 31 IFERN 32 IN ST	= 16 of 16 Max NTY F2 TY SH# TY OC# Y FAIR T CH1 T CH2# T M-C# T TRAN YISPRN ATE/PT
F1 F2 F3 F4 HELP GOTO PREVIOUS NEXT ZONE ZONE ZONE ZONE	F5 F6 PRINT SCREEN	F7 F8 ERASE LIST	F9 F10 EXIT

Now open up Art Money, agree to the terms, close any boxes that pop up, and you should see a screen like this:

ArtMoney SE v7.31	
Table Result Edit Process Search Help	
Search Rilter	Noptions ? Help About
Select process	<b>M</b>
-	
	At first, select the game process
Benchmark Clear	🕞 Load 🕞 Save 🚺 Info

Now go up to where it says "Select Process" and pull down the drop down menu, and pick the SPECTRA.EXE (which is the RSS that is running in the background at the moment).



Search	Exact value	×
Value	= 🗹 16	V
Туре	Integer (standard)	<b>.</b>
Address range	ALL	~

Now click the "Search" button at the top to bring up this dialog box.

For "Value", put in the current number of selected modes to be scanned, which should be 16, since you want to exceed 16. (Remember, if you drop below the 16 modes to be scanned when editing the scan list in RSS, you will have to do this again!) Then Press OK, and let the program do a search and then you will get this dialog box.

🦻 Sear	ch process ( Step	1)	-	-	-	×
100%						
0			1248КЬ			2496КЬ
	Elapsed Time:	0.12 sec		Speed:	19.5 Mb/sec	
	Remaining Time:	0 sec		Found:	5326	
			🗸 ОК			

Click "OK" and you will see that there are many values. Don't worry! It will be narrowed down with the next steps! <sup>(i)</sup>

🐺 ArtMoney SE v7.31	(			_ 🗆 🔀
Table Result Edit F	Process Search Help			
🔎 Search	Riter	💦 Options	? Help	About
Select process	D:\RSS\SPECTRA.EX	E		<b>v</b>
Address Type	^			
00000019 Intege 00000095 Intege 00000095 Intege 000000D Intege 000000B Intege 000000B Intege 000000B Intege 000000C5 Intege 000000C7 Intege 0000000F9 Intege 000000F9 Intege 00000111 Intege 00000111 Intege	2         Joyte           22         Joyte           27         Joyte	]		
Found 5326 addresses	an 2 hrtad	Filter until the number of	matching occurrences no lo	nger decreases
Benchmark	Clear	🕒 Load	Save	<ol> <li>Info</li> </ol>

Now go back to the Spectra RSS (DO NOT EXIT ART MONEY!). Deselect one of your modes to scan, so it reads "15 of 16 Max". Some of you may see where I am going with this.

Civ D:	RSS\SPECT	RA.E	XE								- 🗆 🗙
MOT O SPEC Page CHG/	ROLA Ra TRA = 01 o VIEW:RA	dio f Ø DIO	Service S Model: T8 ZONE_N:SC	oftwar 3GXA7H AN LIS	e A9AX T	Use Or	Up / I Use P	Down gUp /	Arrows 1 PgDn Tc	lo Select View Mo	ře.
Zon #XX 1 2 3 4 5 6 7 8 9 10	e 01 NAME <selmo MODE MODE MODE MODE MODE MODE MODE MO</selmo 	D> 12 34 56 78 90	TYPE N Pri N Pri N Pri N Pri N Pri N Pri N Pri N Pri N Pri	11 12 13 14 15 16 17 18 19 20 21	PRI TLKO MUNSTER F MUNSTER F MUNSTER F UARIOUS F UARIOUS F UARIOUS F UARIOUS F UARIOUS F UARIOUS F UAUSTER I LOWELL FI LOWELL FI LOWELL FI LOWEL FI	ROUP D N H2 N D N GW N GW N SP W NP PD	SCAN ) Pri Pri Pri	LIST 22 23 24 25 26 27 28 27 30 31 32	List LKE CNI LK CNTY LK CNTY PROMPT PROMPT PROMPT ILEEN/I IFENN IN STAT	= 15 of 1 Y F2 Y SH# Y OC# PAIR CH1 CH2# M-C# TRAN SPRN YE/PT	6 Max
F1 HELP	F2 GOTO ZONE		F3 PREVIOUS ZONE	F4 NEXT ZONE	F5 PRINT SCREEN	F6	E	F7 RASE IST	F8	F9	F10 EXIT

Now go back to Art Money without exiting the Spectra RSS and click "Filter" and that will open up this dialog box.

Search	Exact value	×
Value	= 🔽 15	
Туре	Integer (standard)	<b>v</b>

The whole point of this is to see which of those many "16" values changed to "15". This will then narrow it down to which memory location stores this value. Change the "Value" to "15", since you eliminated one of the modes to be scanned. Click "OK" and after it is done searching, you will get this dialog box.

🤫 Filter	process (Step 2	)		_	_	×
100%			10// 5			20115
0	Elapsed Time:	0.6 sec	TUND	Speed:	336 Kb/sec	20150
	Remaining Time:	0 sec		Found:	2	
			🗸 ок			

As you can see, it narrowed it down to only 2 Values! Click the "OK" button and you will see only the two values in Art Money.

Guide created by: linkinpark9812



Press the Green arrow that is pointing to the right. That will add all of the values it found in the left table and put them in the right table where they can be edited. Then the screen should look like this.

able Result Edit Process Search H	Help er	🚮 Options	. н	elp	About	
Select process D:\RSS\SPECT	RA.EXE					
ddress Type	F	Description	Address	Value	Туре	
006A464 Integer 2 bytes		Value 1	0006A464	15	Integer	2 byte
006A466 Integer 4 byte:		Value 2	0006A466	15	Integer	4 byte
ound 2 addresses	Int	table 2 addresses				

As you can see, both values are "15", which is what the RSS currently reads. Click one of the "15"'s in Art Money and type in "17" and PRESS ENTER (very important). Do this to both of the values. Then your screen should look like this.

Search	ocess Search H	lelp er		న Options	] <mark>?</mark> н	elp	About	
Select process	D:\RSS\SPECTF	RA.EXE	-1970		499 - 400 	11	~	
ddress Tune			F	Description	Address	Value	Tune	
006A464 Integer	2 bytes	+		Value 1	0006A464	17	Integer	2 by
006A466 Integer	4 bytes	-		Value 2	0006A466	17	Integer	4 by

Now both values are "17". Now when you go back to the RSS, it will still read "15 of 16 Max". This is because it isn't doing any calculation. However, when you go to ADD TWO MORE MODES to the scan list, the program is going to use your value of "17" and add "+2" since you are adding two more modes. Then the RSS will read "19 of 16 Max". Yes, I know this is incorrect so just hold on! So go ahead and ADD TWO MORE MODES to the scan list and your screen should look like this.

D:\RSS\SPECTRA.EXE									
MOTOROLA Radio Service Software SPECTRA Model: T83GXA7HA9AK Page = Ø1 of Ø5 CHG/UIEW:RADIO:ZONE_N:SCAN LIST								ře.	
Zon #XX 1234 567 89 10	e 01 NAME <selmod> MODE 1 MODE 2 MODE 3 MODE 3 MODE 4 MODE 5 MODE 6 MODE 5 MODE 8 MODE 9 MODE 9 MODE 10</selmod>	TYPE N Pri Pri 2 Pri 1 N Pri N Pri N Pri N Pri N Pri N Pri N Pri	11 12 13 14 15 16 17 18 19 20 21	PRI TLKO MUNSTER I MUNSTER I MUNSTER I UARIOUS I VARIOS HO MUNSTER I LOWELL PI LOWELL PI LOWELL PI LOWELL PI	GROUP SCA PD N Pri 7D N Pri 7D N Pri 7GW N Pri 7D N Pri 7D N Pri 7D N Pri 70 N Pri	N LIST 22 23 24 25 26 27 28 29 30 31 32	List LKE CNT LK CNTS LK CNTS LK CNTS LKCNTY PROMPT PROMPT PROMPT ILEEN/J IFERN IN STAI	= 19 of 1 TY F2 2 SH# 2 OC# FAIR CH1 CH2# M-C# TRAN ISPRN TE/PT	6 Max
F1 HELP	F2 GOTO ZONE	F3 PREVIOUS ZONE	F4 NEXT ZONE	F5 PRINT SCREEN	F6	F7 ERASE LIST	F8	F9	F10 EXIT

Now, to have it recalculate how many modes you really have selected scanning now, press "F10" to exit the screen, and then press "F7" to go back to the scan list. Now it will recalculate the number of modes to be scanned and will look like this.

D:\RSS\SPECTRA.EXE								
MOTOROLA R SPECTRA Page = Ø1 CHG/UIEW:R	adio Serv Mode of Ø5 ADIO:ZONE	vice Softwar el: T83GXA7H E_N:SCAN LIS	`е ІА́9АХ :Т	Enter V	alue.			
Zone 3 # NAME XX <selm 1 MODE 2 MODE 3 MODE 4 MODE 6 MODE 6 MODE 7 MODE 8 MODE 9 MODE 10 MODE</selm 	0D> N 1 N 2 Pr 3 Pr 4 N 5 N 5 N 7 N 8 N 9 N 10 N	/PE Pri 11 Pri 12 ri 2 13 ri 1 14 Pri 15 Pri 16 Pri 17 Pri 18 Pri 19 Pri 20 Pri 21	PRI TLK MUNSTER MUNSTER MUNSTER UARIOUS VARIOS H MUNSTER LOWELL P LOWELL F LKE CNTY	GROUP SCI PD N Pr CH2 N Pr FD N Pr FGW N Pr FD N Pr OSP N Pr OSP N Pr INP D PD	AN LIST i 22 i 23 i 24 i 25 i 26 i 27 28 29 30 31 32	List = LKE CNT LK CNTY LK CNTY LKCNTY PROMPT PROMPT PROMPT ILEEN/I IFERN IN STAT	17 of 1 SH# OC# FAIR CH1 CH2# M-C# TRAN SPRN E/PT	L6 Max
F1 F HELP GOT ZON	2 F O PREU E ZC	F3 F4 JIOUS NEXT ONE ZONE	F5 PRINT SCREEN	F6	F7 ERASE LIST	F8	F9	F10 Exit

Now, it reads "17 of 16 Max". Go ahead and add more modes to scan. Just be sure to NEVER DROP IT TO 16 OR BELOW. If you do, you will have to repeat the process. Here is an example of an exceeded scan list! <sup>(i)</sup>

es D:	RSS\SPEC	TRA.E	XE							- 🗆 >
MOTO SPEC Page CHG/	ROLA Ra TRA = 01 c VIEW:Rf	adio of Ø ADIO	Service S Model: T8 ZONE_N:SC	oftwar 3GXA7H AN LIS	e A9AK T	Use l Or l	lp / Down Ise PgUp /	Arrows 1 ' PgDn To	o Select View Mo:	, re.
Zon	e 01				PRI TLK	ROUP S	SCAN LIST	List =	= 24 of 1	6 Max
#	NAME		TYPE		MULIOTED					
1	MODE	1	N Pri	12	MUNSTER (	10 N I	$P_{\rm mi}$ 23	LK CNTY	SHH N P	wi.
2	MODE	2	N Pri	13	MUNSTER H	DNI	Pri 24	LK CNTY	OC#	
3	MODE	3	N Pri	14	MUNSTER I	GW N I	Pri 25	LKCNTY	FAIR	
4	MODE	- 4	N Pri	15	<b>UARIOUS B</b>	DNI	Pri 26	PROMPT	CH1	
5	MODE	- 5	N Pri	16	UARIOS HO	SP	27	PROMPT	CH2# N P	ri
6	MODE	6	N Pri	17	MUNSTER I	W	28	PROMPT	M-C# N P	ri
2	MODE		N Pri	18	MUNSTER I	NPNI	ri 29	PROMPT	TRAN	
ğ	MODE	ğ	N Pri	17	LOWELL PI	N	ri 30	I LEEN/I	SPRN	
10	MODE	10	N Pri	20	LKE CNTY	PDNI	Pri 32	IN STAT	E/PT	P1
F1	F2	2	F3	F4	F5	F6	F7	F8	F9	F10
ELP	GOTO	D E	PREUIOUS	NEXT	PRINT		ERASE			EXII

#### To do this to other zones, go to that zone's scan list and just click back to Art Money. The memory locations should be the same! <sup>(C)</sup>

Guide created by: linkinpark9812

# Now before you go and program your radio, you need to read this if you plan on making the scan list front end programmable.

If you don't want to make the scan list front end programmable AT ALL, go to the "Scan List Options" for that Zone and make sure that "Non Priority List" and "Priority List" (If you have it set as a Priority enabled scan list) to "Zone Slaved". This will still allow seeing what is being scanned by holding the SCAN button down, but anytime you try to select or deselect a mode, it will give you an error beep.

If you want to make the scan list front end programmable, then here is what I recommend and also different ways you can do it. I am assuming you have a Priority enabled scan list. You can do this by making sure "Scan Type" is set to Priority. If it isn't, you will only have non priority modes and I actually recommend making the non priority modes "Zone Slaved" so it cannot be changed on the front panel. You will see why later.

ANY WAYS here is how it works. If you set "Non Priority List" to "Zone Slaved", that means that any modes that you select as non priority in the RSS WILL NOT be able to be removed or it's priority changed on the control head. You may ask "why should I do this"? Well the reason is that the Radio's firmware is smarter than the RSS and cannot be manipulated much. To leave the boring stuff on how it does it, the radio does some calculation where it knows that there are too many modes. So trying to add modes when over the 16, the radio will just give you a "LIST FULL" message (you will see that there is an exception to this though). Let's say you have 19 modes, all non-priority, to scan. You want to remove 2 for now. So you go into the scan list and remove those two. Now you only have 17 modes scanning. Well you won't be able to add those two back unless you reprogram the radio with the RSS. However, if you are careful, you can leave the "non Priority List" to "Op Select". When you go to the scan list on the control head, however, you still CANNOT remove those modes from the scan list. If you do, the same thing above happens. BUT, you can change the Non Pri mode to Pri 1 or Pri 2. Now you may be thinking that you do have to cycle to the deselect option to do this. This is why you have to be careful. If you accidently leave the mode in the deselect position and exit the scan list editing OR CHANGE TO A DIFFERENT MODE BY USING THE MODE KEYS OR RCL KEY, it will be removed from the list and cannot be added back because the list is full, according to the Radio. Cycling the mode will make the change permanent. So if you want to have it like that, that is fine.

Now let's talk about setting up the "Priority Scan List" to "Zone Slaved" or "OP Select". If you put it in Zone Slaved, you can't edit any mode that is Pri 1 or Pri 2. However, I recommend that you make set "Priority Scan List" to "OP Select". The way the radio handles these seem to be different. This gets a little confusing so bear with me. I am going to lay out different scenarios in the tables below.

This is if you have "Priority Scan list" set to "OP Select" and "Non Priority Scan List" set to "Zone Slaved". This is the configuration I recommend and use currently for all zones that have been "hacked". When set up like this, you cannot accidently delete modes permanently from a scan list, requiring you to reprogram the radio with RSS.

What Mode	Set to scanning option?	What you can do:
Any Mode (besides SEL MODE)	"Pri 1" or "Pri 2"	When going to edit these
		modes on the control head,
		they can be cycled to "Pri 1",
		"Pri 2" AND deselected.
		However, even though
		deselected, you can go back
		to them and set them to "Pri
		1" or "Pri 2". The only
		downside is that they can
		NEVER be set to "Non-Pri".
	"Non Pri"	When going to edit these
		modes on the control head,
		you cannot remove them, nor
		change their Priority setting.
		Nuisance delete during scan
		still works though.
	Not selected to scan at all	Same as "Pri 1" or "Pri 2"
SEL MODE	"Pri 1" or "Pri 2"	The same as "Pri 1" or "Pri 2"
		above, but it cannot be
		removed. However, it CAN be
		selected as "Non-Pri" as well
		as "Pri 1" and "Pri 2", unlike
		other modes.
	"Non Pri"	Actually never tried this.
		Either it will be stuck at "Non-
		Pri" or can be cycled to
		"Pri 1", "Pri 2", and "Non-Pri".

So it is somewhat customizable. Basically any mode (excluding SEL MODE) can be set to "Pri 1", "Pri 2", or nothing at all in the RSS, and can be changed to "Pri 1", "Pri 2" and not selected at all on the control head, and can be interchanged without the radio complaining. Still remember that you can only have ONE "Pri 1" and ONE "Pri 2" mode. SEL MODE is the same except it can be cycled to "Non-Pri" as well (and of course can't be deselected).

This is if you have "Priority Scan list" set to "OP Select" and "Non Priority Scan List" set to "OP Select". This gives you a little more customization of scan lists on the control head but you risk accidently permanently removing any mode originally programmed as "Non-Pri" through the RSS.

What Mode	Set to scanning option?	What you can do:
Any Mode (besides SEL MODE)	"Pri 1" or "Pri 2"	Haven't really tried this one,
		but based on experimenting,
		it is probably similar to how
		"Non Pri" works below.
	"Non Pri"	Can be changed to "Pri 1",
		"Pri 2", "Non-Pri, and
		deselected. BEWARE If you
		remove these from the scan
		list and exit programming the
		scan lists or cycle modes, you
		will lose this mode from
		scanning PERMANELTY unless
		you reprogram with RSS.
	Not selected to scan at all	Haven't really tried this one,
		but based on experimenting,
		you will probably get the "LIST
		FULL" error since you are over
		16 modes scanning.
SEL MODE	"Pri 1" or "Pri 2"	The same as "Pri 1" or "Pri 2"
		above, but it cannot be
		removed.
	"Non Pri"	Can be cycled to
		"Pri 1", "Pri 2", and "Non-Pri",
		but not be deselected.

You should do either of those two or set both to "Zone Slaved" to disable scan list editing all together. You shouldn't set "Priority Scan List" to "Zone Slaved" and "Non priority Scan List" to "OP Select" unless you have good reason too (or your scan type is set to Non-Priority only). If you're going to do that you may as well set both to "OP Select". Unless you really don't want your "Pri 1" or "Pri 2" to ever be changed, don't use that combination.

#### Tired of reading yet? 🙂

Well then there isn't much more left! There is only one thing, though it may be a "problem" at my end. I am not sure if others will have this problem, because I originally had 1 zone exceeded and had this problem. But then I exceeded 2 more zones and those zones don't have this problem. I guess this is just in case you have the problem. It isn't really a problem, but when reading the code plug from your radio after you uploaded a code plug with your exceeded zone(s), you may be confused at first. I had two variations of the problem.

The first was after I uploaded my code plug to my radio (using my recommended settings for those zones), everything worked fine. I have everything set to "Non-Pri", one mode set to "Pri 2" and SEL MODE to "Pri 1". When I read the code plug from the Radio, SEL MODE was set to "Non Pri". I could cycle it normally to "Pri 1", "Pri 2", or back to "Non-Pri". But later I found out as long as you don't mess with it, and you upload the code plug to the radio, it will be set to whatever you had it, like in my case "Pri 1". All the other "Non Pri" modes, as well as the "Pri 2" mode, showed up fine.

The Second problem was a more intense version of the first problem. It was the same thing, except you could never select "Pri 1". You could try to cycle the SEL MODE and the only thing you could select was "Pri 2" or "Non-Pri". This applied to any other mode I tried it on. There really was no fix, but I think I may try erasing the scan list, "hack" the zone again, and set my scan list up again. Anyways, if this happens to you, just leave the "Pri 1" mode alone in the RSS, even if it says "Non-Pri". If you know for sure the radio says its "Pri 1", then just leave that mode alone. But what if you want to change your Pri 1? Remember, depending on what table you choose to use above, any mode that is set to "Pri 1", "Pri 2", or not selected at all in the RSS can be freely set on the control head to "Pri 1", "Pri 2", or not selected. So if you want SEL MODE to be "Pri 1", just set it to "Pri 2" and change it on the radio.

### Well, that's it! 🙂

I hope that this guide is pretty easy to follow. I tried to make it easy but wanted to put a lot of details in it so others can go more in depth with it. I know many others (and I) wanted the ability to expand the scanning capabilities of the Spectra, like the Syntor was. I hope this guide was helpful to you!!! <sup>(C)</sup> <sup>(C)</sup>

## --linkinpark9812