

Kenwood TH-F6A/TH-F7E  
Protocol Specification  
Version 1.11

By John May, K6MAY



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## Kenwood TH-F6A/TH-F7E Protocol Specification

This document describes the serial commands used to program and control the Kenwood TH-F6A/TH-F7E handheld transceiver via its serial port.

### Introduction:

The Kenwood TH-F6A/TH-F7E transceiver can be programmed through the serial port using a suitable interface optional PC interface cable (PG-4P). This allows memory management (as used by the Kenwood MCP software) as well as software control of the radio.

The information obtained for this document was gathered using the following equipment and software:

Apple Macintosh 17" PowerBook 1Ghz G4 Computer.  
ZTERM V 1.1Beta 7 Terminal Software.  
BBEdit Version 7.02 Text Editing Software.  
Microsoft Word X for Macintosh – Service Release 1.  
KeySpan USA-19QW USB to Serial Port Adaptor.  
Kenwood TH-F6 FM Transceiver.  
Kenwood PG-4P Programming Interface.  
HP 18180A RS-232C/V.24/RS-449 Serial Port Interface.  
HP 4952A Protocol Analyzer.

Here's how I did it. I wrote files that contained all possible one, two, three, and four letter commands using BBEEdit. These files also had each command alone or with a "0" following each command. I sent these files to the TH-F6 using the "Send Text..." menu command in the ZTERM terminal program. Monitored and recorded the communications using the HP 4952A Protocol Analyzer. Edited the recorded responses from the TH-F6 using BBEEdit. In BBEEdit, I setup a regular expression that searched for a response from the TH-F6 that was not a "?". Recorded the commands that had a valid response. Then I went back, with much patience, and "played" with each valid command until I determined its function and syntax. The results of my research were recorded in Microsoft Word.

I would like to thank the following people who either spotted errors or omissions in previous versions or supported the distribution of this document:

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Héctor, XE1BEF	George, N0SBU
Steve, K9DCI	

Some Kenwood products allow users to control almost all functions of the radio via software. I don't believe that all functions that are available from the buttons and knobs on the TH-F6/F7 are controllable via software. This is most likely because Kenwood disables the speaker/mic or TNC interface when the TH-F6/F7 is in PC mode and connected to a serial interface. Kenwood probably didn't see a reason to implement all such commands.

## **Additions or Corrections**

I would greatly appreciate any additions or corrections that anyone has to this document. Please email me at:

[k6may@k6may.com](mailto:k6may@k6may.com)

Thank you.

# Tables

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## 1. APO Table

<b>[val]</b>	<b>Time</b>
0	Off
1	30 min
2	60 min

## 2. Balance Table

<b>[val]</b>	<b>A Band</b>	<b>B Band</b>
0	100%	0%
1	75%	25%
2	50%	50%
3	25%	75%
4	0%	100%

### 3. Band Table

[band]	A/B Band	Freq
0	A	2m
1	A	1.25m
2	A	70cm
3	n/a	n/a
4	B	AM
5	B	HF
6	B	6m
7	B	FM
8	B	Air
9	B	2m
a	B	VHF TV
b	B	1.25m
c	B	70cm
d	B	UHF TV
e	B	23cm

#### 4. Band Limits Table

[band]	A/B Band	[list]
0	A	2m lower – 2m upper
		1.25m lower – 1.25m upper
		70cm lower – 70cm upper
1	B	AM lower – AM upper
		HF lower – HF upper
		6m lower – 6m Upper
		FM lower – FM upper
		Air lower – Air upper
		2m lower – 2m upper
		VHF TV lower – VHF TV upper
		1.25m lower – 1.25m upper
		70cm lower – 70cm upper
		UHF TV lower – UHF TV upper
		23cm lower – 23cm upper

## 5. Band Switch Table

<b>[val]</b>	<b>A/B</b>
0	A
1	B

## 6. Battery Saver Table

<b>[val]</b>	<b>Time</b>
0	Off
1	0.2
2	0.4
3	0.6
4	0.8
5	1.0 (default)
6	2.0
7	3.0
8	4.0
9	5.0

## 7. Battery Type Table

<b>[val]</b>	<b>Type</b>
0	Lithium
1	Alkaline



## 8. Busy Table

<b>[stat]</b>	<b>State</b>
0	Not busy
1	Busy

## 9. Call Key Table

[val]	Time
0	Call
1	1750 Hz

## 10. Character Table

Available Characters (TH-F6A)									
A	B	C	D	E	F	G	H	I	J
K	L	M	N	O	P	Q	R	S	T
U	V	W	X	Y	Z	[	]	^	_
`	a	b	c	d	e	f	g	h	i
j	k	l	m	n	o	p	q	r	s
t	u	v	w	x	y	z	{		}
~	\	<i>SP</i>	!	“	#	\$	%	&	‘
(	)	*	+	,	-	.	/	0	1
2	3	4	5	6	7	8	9	:	;
<	=	>	?	@					
Additional Characters (TH-F7E)									
À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É
Ê	Ë	Ì	Í	Î	Ï	‹	Ñ	Ò	Ó
Ô	Õ	Ö		Ø	Ù	Ú	Û	Ü	†
	ß	Ɔ	à	á	â	ã	ä	å	æ
ç	è	é	ê	ë	ì	í	î	ï	›
ñ	ò	ó	ô	õ	ö	œ	ø	ù	ú
û	ü	‡	ÿ	ÿ					

## 11. Contrast Table

[val]	A
01	(Minimum)
02	
03	
04	
05	
06	
07	
08	Default
09	
10	
11	
12	
13	
14	
15	
16	Maximum

## **12. DCS Code Table**

<b>#</b>	<b>Code</b>	<b>#</b>	<b>Code</b>	<b>#</b>	<b>Code</b>	<b>#</b>	<b>Code</b>
000	023	026	152	052	311	078	466
001	025	027	155	053	315	079	503
002	026	028	156	054	325	080	506
003	031	029	162	055	331	081	516
004	032	030	165	056	332	082	523
005	036	031	172	057	343	083	526
006	043	032	174	058	346	084	532
007	047	033	205	059	351	085	546
008	051	034	212	060	356	086	565
009	053	035	223	061	364	087	606
010	054	036	225	062	365	088	612
011	065	037	226	063	371	089	624
012	071	038	243	064	411	090	627
013	072	039	244	065	412	091	631
014	073	040	245	066	413	092	632
015	074	041	246	067	423	093	654
016	114	042	251	068	431	094	662
017	115	043	252	069	432	095	664
018	116	044	255	070	445	096	703
019	122	045	261	071	446	097	712
020	125	046	263	072	452	098	723
021	131	047	265	073	454	099	731
022	132	048	266	074	455	100	732
023	134	049	271	075	462	101	734
024	143	050	274	076	464	102	743
025	145	051	306	077	465	103	754

### 13. DTMF Table

Dual Tone Multi-Frequency (DTMF) Table					
		High-Group Frequencies			
		1209 Hz	1336 Hz	1477 Hz	1633 Hz
Low-Group Frequencies	697 Hz	1	ABC 2	DEF 3	A
	770 Hz	GHI 4	JKL 5	MNO 6	B
	852 Hz	PRS 7	TUV 8	XYZ 9	C
	941 Hz	* 0	OPER 0	#	D

Dual Tone Multi-Frequency, or DTMF is a method for instructing a telephone switching system of the telephone number to be dialed. The DTMF dialing system was developed by AT&T in the 1960s and was deployed within the AT&T telephone network as a way for customers to direct calls using in-band signaling. AT&T marketed this under the registered trade name Touch-Tone®.

The DTMF system uses eight different frequency signals transmitted in pairs to represent sixteen different numbers, symbols and letters. This table shows how the frequencies are organized. The frequencies used were chosen to prevent any harmonics from being incorrectly detected by the receiver as some other DTMF frequency. The transmitter of a DTMF signal simultaneously sends one frequency from the high-group and one frequency from the low-group. This pair of signals represents the digit or symbol shown at the intersection of row and column in the table. For example, sending 1209Hz and 770Hz indicates that the "4" digit is being sent.

## 14. DTMF Memory Locations Table

<b>DTMF Memory Locations</b>		
[cc]	Number	Name
00		
01		
02		
03		
04		
05		
06		
07		
08		
09		

## 15. DTMF Pause Table

<b>[val]</b>	<b>Duration</b>
0	100 ms
1	250 ms
2	500 ms
3	750 ms
4	1000 ms
5	1500 ms
6	2000 ms



## 16. DTMF Speed

[val]	Speed
0	Slow
1	Fast

## 17. Dual Mode Table

[val]	Mode
0	Single
1	Dual

**18. Fine Tuning Step Size Table**

<b>[val]</b>	<b>Step Size</b>
0	33 Hz
1	100 Hz
2	500 Hz
3	1000 Hz

## 19. Frequency Table

<b>Field</b>	<b>Value</b>	<b>Description</b>	<b>Split Use</b>
freq	11 digits	See Frequency Value Table	yes
step	0-9	See Step table	yes
shift/offset	0, 1, 2	0 = none or split, 1 = positive, 2 = negative	no
rev	0, 1	0 = Reverse off, 1 = Reverse on.	no
Tone (PL)	0, 1	0 = Tone off, 1 = tone on	no
CTCSS	0, 1	0 = CTCSS off, 1 = CTCSS on (Overrides tone)	no
DCS	0, 1	0 = DCS off, 1 = DCS on (Overrides CTCSS and tone)	no
tone freq	1-39	See Tone/CTCSS Frequency Codes Table	no
CTCSS freq	1-39	See Tone/CTCSS Frequency Codes Table	no
DCS code	000 - 103	See DCS Code Table	no
offset freq	9 digits	9 digits in Hz (<=59.95 MHz)	no
mode	0 - 5	See Mode Table	no
lockout	0, 1	0 = Scan, 1 = Skip	no

## 20. Frequency Value Table

[freq]	
5 digit value	nnnnn – frequency in MHz
11 digit value	nnnnnnnnnnnn – frequency in Hertz

If the frequency is a five (5)-digit value, then the frequency is in MHz. If the frequency is an 11-digit value, then the frequency is in Hertz. For example, 00137 is 137.000 MHz, where 00163275000 is 163.275 MHz.

## 21. Ham Band Table

[band]	Ham Band
0	2m
1	1.25m
2	70cm

## 22. ID Table

[id]
TH-F6
TH-F7

## 23. Language Table

[lang]	Language
0	English
1	Japanese (Katakana)



## 24. Lock Table

[val]	State
0	Unlocked
1	Locked

## 25. Logic Table

[val]	State
0	Off
1	On

## 26. Memory Channel Table

<b>[name]</b>	<b>Step Size</b>
000 - 399	400 memory channels
L0 – L9	10 lower scan limit channels
U0 – U9	10 upper scan limit channels
I-0 – I-9	10 information channels
PR1, PR2	2 priority channels
n/a	3 call channels (one for each of the three bands)
n/a	3 A-band VFO settings
n/a	11 B-band VFO settings
n/a	10 DTMF memories

## 27. Memory Group Table

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
0	1	2	3	4	5	6	7
space	space	space	space	space	space	space	space

Each column contains the valid character for the respective positions. For example, position number five (5) may contain either a four (4) character or an ASCII space character. If the four character is present, the fourth group is linked. If the fifth position contains an ASCII space, the fourth group is not a member of this link.

## 28. Memory Recall Table

<b>[val]</b>	<b>Method</b>
0	All bands
1	Current band

## 29. Modulation Mode Table

<b>[mode]</b>	<b>Modulation</b>
0	FM
1	WFM
2	AM
3	LSB
4	USB
5	CW

### 30. Name/Frequency Mode Table

[val]	Mode
0	Name
1	Frequency

### 31. Packet Speed Table

[val]	Speed
0	1200 bps
1	9600 bps



## 32. Power Level Table

<b>[pwr]</b>	<b>Output</b>
0	H
1	L
2	EL

### 33. Return Code Table

<b>Return Code</b>	<b>Description</b>
N	Radio recognized command, but it was used incorrectly or the invalid parameters were specified.
O	Overflow of radio's character buffer. If more than 126 characters are sent without a carriage return, the radio responds with an "O".
?	Radio does not recognize the command
command	Command accepted by radio. May be followed by additional values or parameters.

### **34. Scan Resume Table**

<b>[val]</b>	<b>Method</b>
0	Time
1	Carrier
2	Seek

### **35. Serial Port Parameters Table**

<b>Name</b>	<b>Value</b>
speed	9600 Baud
bits	8
parity	none
stop bits	1

## 36. Squelch Table

[val]	
00	No Squelch
01	
02	
03	
04	
05	Highest Squelch

The squelch values range from 00 (no squelch) to 05 (highest squelch). The higher the level, the stronger the signals must be to un-mute the speaker and allow the signal to be received.

### 37. Split Channel

<b>[split]</b>	<b>Channel Definition</b>
0	Main or receive channel
1	Transmit channel

## 38. State Table

[val]	State
0	Disabled
1	Enabled

### 39. Step Size Table

<b>Number</b>	<b>Step Size</b>
0	5.0 kHz (<470 MHz)
1	6.25 kHz (<470 MHz)
2	8.33 kHz (Air Band)
3	9.0 kHz (AM Band)
4	10.0 kHz (>470 MHz)
5	12.5 kHz (>470 MHz)
6	15.0 kHz (<470 MHz)
7	20.0 kHz (>470 MHz)
8	25.0 kHz (>470 MHz)
9	30.0 kHz (>470 MHz)
a	50.0 kHz (>470 MHz)
b	100.0 kHz (>470 MHz)



#### 40. System Reset Table

<b>Number</b>	<b>Reset Type</b>
0	No
1	VFO
2	Menu
3	Full

#### 41. Tone/CTCSS Frequency Codes Table

#	Tone	#	Tone	#	Tone	#	Tone
01	67.0	12	97.4	23	141.3	34	206.5
02	69.3	13	100.0	24	146.2	35	210.7
03	71.9	14	103.5	25	151.4	36	218.1
04	74.4	15	107.2	26	156.7	37	225.7
05	77.0	16	110.9	27	162.2	38	229.1
06	79.7	17	114.8	28	167.9	39	233.6
07	82.5	18	118.8	29	173.8	40	241.8
08	85.4	19	123.0	30	179.9	41	250.3
09	88.5	20	127.3	31	186.2	42	254.1
10	91.5	21	131.8	32	192.8		
11	94.8	22	136.5	33	203.5		

## 42. VFO Mode Table

<b>[mode]</b>	<b>Mode</b>
0	VFO also Fine Step Tuning off
1	MR
2	CALL
3	Fine Step Enable (VFO mode only)
4	INFO channels recall

### 43. VOX Delay Table

<b>[val]</b>	<b>Time</b>
0	250 ms
1	500 ms
2	750 ms
3	1000 ms
4	1500 ms
5	2000 ms
6	3000 ms

#### **44. VOX Gain Table**

[val]	
00	Least Sensitive
01	
02	
03	
04	Default
05	
06	
07	
08	
09	Most Sensitive

The VOX Gain value varies from 00 (least sensitive) to 09 (most sensitive). The level should be set to allow the transceiver to reliably switch to transmit mode each time the operator speaks without allowing background noise to trigger the transceiver.

# Commands

## Command Summary

Command	Description	Menu Item
ANT	Bar Antenna	26
APO	Automatic Power Off (APO)	18
ARO	Auto Repeater Offset	05
ATT	Attenuator	n/a
ASC	Auto Simplex Check	n/a
BAL	Volume Balance	n/a
BAT	Battery Type	30
BC	Band Control	n/a
BEL	Tone Alert	n/a
BEP	Beep Function	19
BY	Busy	n/a
CKEY	Call Key	23
CNT	Contrast	16
CR	Call Channel Read	n/a
CW	Call Channel Write	n/a
DATP	Packet Speed	28
DL	Dual	n/a
DLK	DTMF Lock	14
DM	Get/Set DTMF Memory Number Location	10
DMN	Get/Set DTMF Memory Name Location	10
DW	Down	n/a
ELK	Tune Enable	07
FL	Frequency Limits	n/a
FQ	Current Frequency and Step Size	n/a
FST	Fine Tuning Step Size	n/a
ID	Identity of Radio	n/a
LAN	Get/Set Default Language	27
LK	Lock	n/a
LMP	Lamp	n/a
MC	Memory Channel Frequency and Step Size	n/a
MD	Modulation Mode	n/a
MES	Get/Set Power on Message	15

<b>Command</b>	<b>Description</b>	<b>Menu Item</b>
MGL	Memory Group Link	02
MNA	Memory Name	n/a
MNF	Memory Name Frequency	n/a
MR	Memory Channel Read	n/a
MRM	Memory Recall Method	03
MW	Memory Write	n/a
NAR	FM Narrow	29
NSFT	Beat Shift	25
PC	Power Control	n/a
PT	DTMF Pause	13
PV	Program VFO Limits	04
RBN	Set Band	n/a
RX	Receive	n/a
SCR	Scan Resume	01
SQ	Squelch	n/a
SR	Reset	31
SV	Battery Saver	17
TH	1750 Hold	24
TXS	Transmit Inhibit	08
TXH	DTMF Hold	12
TSP	DTMF Speed	11
TT	Transmit Tone	n/a
TYD	Radio Type	n/a
TX	Transmit	n/a
UP	Up	n/a
VMC	Mode of the VFO band	n/a
VOX	VOX Transmit	n/a
VR	VFO Read	n/a
VW	VFO Write	n/a
VXB	VOX on Busy	20
VXD	VOX Delay	22
VXG	VOX Gain	21



## Command Description Format

Mnemonic	Short Description
<i>Description:</i>	Long description of command function.
<i>Function:</i>	Description of what command does to transceiver.
<i>Send:</i>	Format of command sent to transceiver. Parameters for each command are enclosed in [].
<i>Return:</i>	Format of the response from the transceiver.
<i>Where:</i>	A description of the parameters for the command.
<i>Notes:</i>	Any additional information.
<i>Example:</i>	Examples illustrating command use.

Each command is consist of a mnemonic followed by data. The command is a string made up of ASCII characters ending in an ASCII carriage return. The space between the mnemonic and data is required. Commas usually separate data elements. All spaces and commas shown are required. Commands sent and received are in similar format, that is, an ASCII string consisting of a mnemonic followed by data ending in a carriage return.

ANT	Bar Antenna													
<p><i>Description:</i></p> <p>Enables or disables the bar antenna. <span style="float: right;"><i>Menu Item #</i> 26</span></p>														
<p><i>Function:</i></p> <p>Due to the size limitations of the helical antenna, it may not be suitable for low HF band reception. The transceiver has a built-in bar antenna for reception of HF frequencies. This function allows the transceiver to automatically switch to the bar antenna when a frequency is selected a below 10.1 MHz for the B-band.</p>														
<p><i>Send:</i></p> <table border="1" data-bbox="240 772 1382 814"> <tr> <td>Status:</td> <td>ANT</td> </tr> </table> <table border="1" data-bbox="240 848 1382 890"> <tr> <td>Modify:</td> <td>ANT [val]</td> </tr> </table>			Status:	ANT	Modify:	ANT [val]								
Status:	ANT													
Modify:	ANT [val]													
<p><i>Return:</i></p> <table border="1" data-bbox="240 1037 1382 1079"> <tr> <td>ANT [val]</td> <td></td> </tr> </table>			ANT [val]											
ANT [val]														
<p><i>Where:</i></p> <table border="1" data-bbox="240 1226 1382 1268"> <tr> <td>[val]</td> <td>see State Table</td> </tr> </table>			[val]	see State Table										
[val]	see State Table													
<p><i>Notes:</i></p>														
<p><i>Example:</i></p> <table border="1" data-bbox="240 1562 1382 1633"> <tr> <td>Sent:</td> <td>ANT</td> <td>Requesting status of bar antenna.</td> </tr> <tr> <td>Return:</td> <td>ANT 0</td> <td>Transceiver says that bar antenna is off.</td> </tr> </table> <table border="1" data-bbox="240 1675 1382 1747"> <tr> <td>Sent:</td> <td>ANT 1</td> <td>Requesting bar antenna to be on.</td> </tr> <tr> <td>Return:</td> <td>ANT 1</td> <td>Confirming that bar antenna is now on.</td> </tr> </table>			Sent:	ANT	Requesting status of bar antenna.	Return:	ANT 0	Transceiver says that bar antenna is off.	Sent:	ANT 1	Requesting bar antenna to be on.	Return:	ANT 1	Confirming that bar antenna is now on.
Sent:	ANT	Requesting status of bar antenna.												
Return:	ANT 0	Transceiver says that bar antenna is off.												
Sent:	ANT 1	Requesting bar antenna to be on.												
Return:	ANT 1	Confirming that bar antenna is now on.												

<b>APO</b>	<b>Automatic Power Off</b>
------------	----------------------------

*Description:*

Gets or sets the Automatic Power Off (APO) feature.

*Menu Item #*  
18

*Function:*

The transceiver switches OFF automatically if no keys or controls are pressed or adjusted, and no signal is received for the selected time. A warning beep sounds one minute before the transceiver switches OFF.

*Send:*

Status:	APO
---------	-----

Modify:	APO [val]
---------	-----------

*Return:*

APO [val]	
-----------	--

*Where:*

[val]	see APO Table
-------	---------------

*Notes:*

*Example:*

Sent:	APO	Requesting status of automatic power off.
Return:	APO 1	Transceiver says that automatic power off is on.

Sent:	APO 0	Requesting automatic power off is off.
Return:	APO 0	Confirming that automatic power off is off.

ARO		Auto Repeater Offset	
<i>Description:</i>			
Turns on or off or gets state of the Auto Repeater Offset (ARO) function.		Menu Item # 05	
<i>Function:</i>			
This function automatically selects an offset direction, according to the frequency that you select on the 2 m and 1.25 m (TH-F6A only) bands.			
<i>Send:</i>			
Status:	ARO		
Modify:	ARO [val]		
<i>Return:</i>			
ARO [val]			
<i>Where:</i>			
[val]	see Logic Table		
<i>Notes:</i>			
<i>Example:</i>			
Sent:	ARO	Requesting status of ARO	
Return:	ARO 0	Transceiver says that ARO is off.	
Sent:	ARO 1	Requesting ARO to be on	
Return:	ARO 1	Confirming that ARO is now on.	

ASC		Auto Simplex Check	
<i>Description:</i>			
Get or set Auto Simplex Check for a given band.		<i>Menu Item #</i> <i>n/a</i>	
<i>Function:</i>			
Periodically checks the signal strength of received signal to see if it is strong enough to allow contact without a repeater.			
<i>Send:</i>			
Status:	ASC [band]		
Modify:	ASC [band],[val]		
<i>Return:</i>			
ASC [band],[val]			
<i>Where:</i>			
[band]	see Band Switch Table		
[val]	see Logic Table		
<i>Notes:</i>			
<i>Example:</i>			
Sent:	ASC 0	Status of Auto Simplex Check on A band.	
Return:	ASC 0,0	Auto Simplex Check is off on A band.	
Sent:	ASC 1,1	Request that B band ASC be on.	
Return:	ASC 1,1	Transceiver confirms.	

ATT		Attenuator	
<i>Description:</i>			
Gets or sets the attenuator.		<i>Menu Item #</i> n/a	
<i>Function:</i>			
Use to attenuate nearby or extremely strong signals to prevent erroneously control and overload. The attenuator is approximately 20 DB when ON.			
<i>Send:</i>			
Status:	ATT		
Modify:	ATT [val]		
<i>Return:</i>			
ATT [val]			
<i>Where:</i>			
[val]	see Logic Table		
<i>Notes:</i>			
<i>Example:</i>			
Sent:	ATT	Requesting status of attenuator.	
Return:	ATT 1	Transceiver says that attenuator is on.	
Sent:	ATT 0	Requesting attenuator is off.	
Return:	ATT 0	Confirming that attenuator is off.	

BAL	Volume Balance													
<p><i>Description:</i></p> <p>Gets or sets the volume balance between A and B bands. <span style="float: right;"><i>Menu Item #</i> n/a</span></p>														
<p><i>Function:</i></p> <p>While receiving on the A and B bands at the same time, one band's audio output may be too loud. This function adjusts the volume balance level of the bands.</p>														
<p><i>Send:</i></p> <table border="1" data-bbox="240 701 1382 741"> <tr> <td>Status:</td> <td colspan="2">BAL</td> </tr> </table> <table border="1" data-bbox="240 779 1382 819"> <tr> <td>Modify:</td> <td colspan="2">BAL [val]</td> </tr> </table>			Status:	BAL		Modify:	BAL [val]							
Status:	BAL													
Modify:	BAL [val]													
<p><i>Return:</i></p> <table border="1" data-bbox="240 968 1382 1008"> <tr> <td>BAL [val]</td> <td colspan="2"></td> </tr> </table>			BAL [val]											
BAL [val]														
<p><i>Where:</i></p> <table border="1" data-bbox="240 1152 1382 1192"> <tr> <td>[val]</td> <td colspan="2">see Balance Table.</td> </tr> </table>			[val]	see Balance Table.										
[val]	see Balance Table.													
<p><i>Notes:</i></p> <p>Default value is 2 (both A and b bands equal).</p>														
<p><i>Example:</i></p> <table border="1" data-bbox="240 1486 1382 1564"> <tr> <td>Sent:</td> <td>BAL</td> <td>Requesting status of Balance.</td> </tr> <tr> <td>Return:</td> <td>BAL 2</td> <td>Transceiver says that Balance is set to 2.</td> </tr> </table> <table border="1" data-bbox="240 1602 1382 1680"> <tr> <td>Sent:</td> <td>BAL 0</td> <td>Requesting balance to be A band only.</td> </tr> <tr> <td>Return:</td> <td>BAL 0</td> <td>Confirming that balance to be A band only.</td> </tr> </table>			Sent:	BAL	Requesting status of Balance.	Return:	BAL 2	Transceiver says that Balance is set to 2.	Sent:	BAL 0	Requesting balance to be A band only.	Return:	BAL 0	Confirming that balance to be A band only.
Sent:	BAL	Requesting status of Balance.												
Return:	BAL 2	Transceiver says that Balance is set to 2.												
Sent:	BAL 0	Requesting balance to be A band only.												
Return:	BAL 0	Confirming that balance to be A band only.												

BAT	Battery Type													
<p><i>Description:</i></p> <p>Gets or sets the battery type. <span style="float: right;"><i>Menu Item #</i> 30</span></p>														
<p><i>Function:</i></p> <p>Used for estimating the remaining battery capacity. The battery type should be set to the type of battery that is in use (either lithium or alkaline).</p>														
<p><i>Send:</i></p> <table border="1" data-bbox="240 701 1383 741"> <tr> <td>Status:</td> <td colspan="2">BAT</td> </tr> </table> <table border="1" data-bbox="240 779 1383 819"> <tr> <td>Modify:</td> <td colspan="2">BAT [val]</td> </tr> </table>			Status:	BAT		Modify:	BAT [val]							
Status:	BAT													
Modify:	BAT [val]													
<p><i>Return:</i></p> <table border="1" data-bbox="240 968 1383 1008"> <tr> <td>BAT [val]</td> <td colspan="2"></td> </tr> </table>			BAT [val]											
BAT [val]														
<p><i>Where:</i></p> <table border="1" data-bbox="240 1152 1383 1192"> <tr> <td>[val]</td> <td colspan="2">see Battery Type Table</td> </tr> </table>			[val]	see Battery Type Table										
[val]	see Battery Type Table													
<p><i>Notes:</i></p>														
<p><i>Example:</i></p> <table border="1" data-bbox="240 1486 1383 1564"> <tr> <td>Sent:</td> <td>BAT</td> <td>Requesting battery type.</td> </tr> <tr> <td>Return:</td> <td>BAT 0</td> <td>Transceiver says that battery type is lithium.</td> </tr> </table> <table border="1" data-bbox="240 1602 1383 1680"> <tr> <td>Sent:</td> <td>BAT 1</td> <td>Requesting battery type is alkaline.</td> </tr> <tr> <td>Return:</td> <td>BAT 1</td> <td>Confirming that battery type is alkaline.</td> </tr> </table>			Sent:	BAT	Requesting battery type.	Return:	BAT 0	Transceiver says that battery type is lithium.	Sent:	BAT 1	Requesting battery type is alkaline.	Return:	BAT 1	Confirming that battery type is alkaline.
Sent:	BAT	Requesting battery type.												
Return:	BAT 0	Transceiver says that battery type is lithium.												
Sent:	BAT 1	Requesting battery type is alkaline.												
Return:	BAT 1	Confirming that battery type is alkaline.												



BC	Band Control													
<p><i>Description:</i></p> <p>Gets or sets the current band. <span style="float: right;"><i>Menu Item #</i> <i>n/a</i></span></p>														
<p><i>Function:</i></p> <p>Selects the A band or B band for operation.</p>														
<p><i>Send:</i></p> <table border="1" data-bbox="240 663 1382 705"> <tr> <td>Status:</td> <td>BC</td> </tr> </table> <table border="1" data-bbox="240 743 1382 785"> <tr> <td>Modify:</td> <td>BC [band]</td> </tr> </table>			Status:	BC	Modify:	BC [band]								
Status:	BC													
Modify:	BC [band]													
<p><i>Return:</i></p> <table border="1" data-bbox="240 926 1382 968"> <tr> <td>BC [val]</td> <td></td> </tr> </table>			BC [val]											
BC [val]														
<p><i>Where:</i></p> <table border="1" data-bbox="240 1115 1382 1157"> <tr> <td>[val]</td> <td>see Band Switch Table</td> </tr> </table>			[val]	see Band Switch Table										
[val]	see Band Switch Table													
<p><i>Notes:</i></p>														
<p><i>Example:</i></p> <table border="1" data-bbox="240 1451 1382 1524"> <tr> <td>Sent:</td> <td>BC</td> <td>Requesting band control status.</td> </tr> <tr> <td>Return:</td> <td>BC 0</td> <td>Transceiver says that band is set to A.</td> </tr> </table> <table border="1" data-bbox="240 1562 1382 1635"> <tr> <td>Sent:</td> <td>BC 1</td> <td>Requesting band to be set to B.</td> </tr> <tr> <td>Return:</td> <td>BC 1</td> <td>Confirming that band is set to B.</td> </tr> </table>			Sent:	BC	Requesting band control status.	Return:	BC 0	Transceiver says that band is set to A.	Sent:	BC 1	Requesting band to be set to B.	Return:	BC 1	Confirming that band is set to B.
Sent:	BC	Requesting band control status.												
Return:	BC 0	Transceiver says that band is set to A.												
Sent:	BC 1	Requesting band to be set to B.												
Return:	BC 1	Confirming that band is set to B.												

<b>BEP</b>	<b>Beep Function</b>													
<p><i>Description:</i></p> <p>Gets or sets the beep function. <span style="float: right;"><i>Menu Item #</i> 19</span></p>														
<p><i>Function:</i></p> <p>The beep function provides an audible confirmation of entry, error status, and malfunctions of the transceiver.</p>														
<p><i>Send:</i></p> <table border="1" data-bbox="240 701 1382 741"> <tr> <td>Status:</td> <td colspan="2">BEP</td> </tr> </table> <table border="1" data-bbox="240 779 1382 819"> <tr> <td>Modify:</td> <td colspan="2">BEP [val]</td> </tr> </table>			Status:	BEP		Modify:	BEP [val]							
Status:	BEP													
Modify:	BEP [val]													
<p><i>Return:</i></p> <table border="1" data-bbox="240 968 1382 1008"> <tr> <td>BEP [val]</td> <td colspan="2"></td> </tr> </table>			BEP [val]											
BEP [val]														
<p><i>Where:</i></p> <table border="1" data-bbox="240 1152 1382 1192"> <tr> <td>[val]</td> <td colspan="2">see Logic Table</td> </tr> </table>			[val]	see Logic Table										
[val]	see Logic Table													
<p><i>Notes:</i></p>														
<p><i>Example:</i></p> <table border="1" data-bbox="240 1486 1382 1564"> <tr> <td>Sent:</td> <td>BEP</td> <td>Requesting status of beep function.</td> </tr> <tr> <td>Return:</td> <td>BEP 1</td> <td>Transceiver says that beep function is on.</td> </tr> </table> <table border="1" data-bbox="240 1602 1382 1680"> <tr> <td>Sent:</td> <td>BEP 0</td> <td>Requesting beep function is off.</td> </tr> <tr> <td>Return:</td> <td>BEP 0</td> <td>Confirming that beep function is off.</td> </tr> </table>			Sent:	BEP	Requesting status of beep function.	Return:	BEP 1	Transceiver says that beep function is on.	Sent:	BEP 0	Requesting beep function is off.	Return:	BEP 0	Confirming that beep function is off.
Sent:	BEP	Requesting status of beep function.												
Return:	BEP 1	Transceiver says that beep function is on.												
Sent:	BEP 0	Requesting beep function is off.												
Return:	BEP 0	Confirming that beep function is off.												

BEL		Tone Alert	
<i>Description:</i>			
Gets or sets the tone alert function.		<i>Menu Item #</i> n/a	
<i>Function:</i>			
Provides an audible alarm when signals are received on the monitored frequency.			
<i>Send:</i>			
Status:	BEL [band]		
Modify:	BEL [band],[val]		
<i>Return:</i>			
BEL [band],[val]			
<i>Where:</i>			
[band]	see Band Switch Table.		
[val]	see Logic Table.		
<i>Notes:</i>			
<i>Example:</i>			
Sent:	BEL 0	Requesting status of tone alert on A band.	
Return:	BEL 0,0	Transceiver says that tone alert is off.	
Sent:	BEL 1,1	Requesting that tone alert is on B band.	
Return:	BEL 1,1	Confirming that tone alert is on B band.	

BY	Busy							
<p><i>Description:</i></p> <p>Displays Busy status of a band. <span style="float: right;"><i>Menu Item #</i> <i>n/a</i></span></p>								
<p><i>Function:</i></p> <p>Busy is the status of the transceiver squelch. If the channel is busy, the squelch is open. If the channel is not busy, the squelch is closed.</p>								
<p><i>Send:</i></p> <table border="1" data-bbox="240 701 1382 741"> <tr> <td data-bbox="240 701 428 741">Status:</td> <td data-bbox="428 701 1382 741">BY [band]</td> </tr> </table>			Status:	BY [band]				
Status:	BY [band]							
<p><i>Return:</i></p> <table border="1" data-bbox="240 890 1382 930"> <tr> <td data-bbox="240 890 573 930">BY [band], [stat]</td> <td data-bbox="573 890 1382 930"></td> </tr> </table>			BY [band], [stat]					
BY [band], [stat]								
<p><i>Where:</i></p> <table border="1" data-bbox="240 1075 1382 1157"> <tr> <td data-bbox="240 1075 428 1115">[band]</td> <td data-bbox="428 1075 1382 1115">see Band Switch Table</td> </tr> <tr> <td data-bbox="240 1115 428 1157">[stat]</td> <td data-bbox="428 1115 1382 1157">see Busy Table</td> </tr> </table>			[band]	see Band Switch Table	[stat]	see Busy Table		
[band]	see Band Switch Table							
[stat]	see Busy Table							
<p><i>Notes:</i></p>								
<p><i>Example:</i></p> <table border="1" data-bbox="240 1451 1382 1528"> <tr> <td data-bbox="240 1451 380 1486">Sent:</td> <td data-bbox="380 1451 740 1486">BY 0</td> <td data-bbox="740 1451 1382 1486">Requesting busy status of A band.</td> </tr> <tr> <td data-bbox="240 1486 380 1528">Return:</td> <td data-bbox="380 1486 740 1528">BY 0,1</td> <td data-bbox="740 1486 1382 1528">Transceiver says that A band is busy.</td> </tr> </table>			Sent:	BY 0	Requesting busy status of A band.	Return:	BY 0,1	Transceiver says that A band is busy.
Sent:	BY 0	Requesting busy status of A band.						
Return:	BY 0,1	Transceiver says that A band is busy.						

CKEY		Call Key
<i>Description:</i>		
Gets or select a function for the Call key.		<i>Menu Item #</i> 23
<i>Function:</i>		
Reassigns the function of the Call key. If Call is selected, the Call key recalls the call channel. If in 1750 Hz mode, pressing the Call key forces the transceiver to transmit a 1750 Hz tone.		
<i>Send:</i>		
Status:	CKEY	
Modify:	CKEY [val]	
<i>Return:</i>		
CKEY [val]		
<i>Where:</i>		
[val]	see Call Key Table	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	CKEY	Requesting status of Call key.
Return:	CKEY 0	Transceiver says that Call key is set to Call.
Sent:	CKEY 1	Requesting Call key be set to 1750 Hz.
Return:	CKEY 1	Confirming that Call key is 1750 Hz.

CNT	Contrast													
<p><i>Description:</i></p> <p>Gets or Adjust the display contrast. <span style="float: right;"><i>Menu Item #</i> 16</span></p>														
<p><i>Function:</i></p> <p>Used to adjust the LCD Display Contrast level from 01 (weakest) to 16 (strongest).</p>														
<p><i>Send:</i></p> <table border="1" data-bbox="240 663 1382 705"> <tr> <td>Status:</td> <td colspan="2">CNT</td> </tr> </table> <table border="1" data-bbox="240 741 1382 783"> <tr> <td>Modify:</td> <td colspan="2">CNT [val]</td> </tr> </table>			Status:	CNT		Modify:	CNT [val]							
Status:	CNT													
Modify:	CNT [val]													
<p><i>Return:</i></p> <table border="1" data-bbox="240 926 1382 968"> <tr> <td>CNT [val]</td> <td colspan="2"></td> </tr> </table>			CNT [val]											
CNT [val]														
<p><i>Where:</i></p> <table border="1" data-bbox="240 1115 1382 1157"> <tr> <td>[val]</td> <td colspan="2">See Contrast Table.</td> </tr> </table>			[val]	See Contrast Table.										
[val]	See Contrast Table.													
<p><i>Notes:</i></p> <p>Default value is 08.</p>														
<p><i>Example:</i></p> <table border="1" data-bbox="240 1451 1382 1524"> <tr> <td>Sent:</td> <td>CNT</td> <td>Requesting status of display contrast.</td> </tr> <tr> <td>Return:</td> <td>CNT 08</td> <td>Transceiver says that display contrast is at 08.</td> </tr> </table> <table border="1" data-bbox="240 1560 1382 1633"> <tr> <td>Sent:</td> <td>CNT 09</td> <td>Requesting that display contrast be 09.</td> </tr> <tr> <td>Return:</td> <td>CNT 09</td> <td>Confirming that display contrast is 09.</td> </tr> </table>			Sent:	CNT	Requesting status of display contrast.	Return:	CNT 08	Transceiver says that display contrast is at 08.	Sent:	CNT 09	Requesting that display contrast be 09.	Return:	CNT 09	Confirming that display contrast is 09.
Sent:	CNT	Requesting status of display contrast.												
Return:	CNT 08	Transceiver says that display contrast is at 08.												
Sent:	CNT 09	Requesting that display contrast be 09.												
Return:	CNT 09	Confirming that display contrast is 09.												

CR	Call Channel Read							
<p><i>Description:</i></p> <p>Displays Call channel data. <span style="float: right;"><i>Menu Item #</i> <i>n/a</i></span></p>								
<p><i>Function:</i></p> <p>Returns all the saved data for the Call channel.</p>								
<p><i>Send:</i></p> <table border="1" data-bbox="240 663 1382 705"> <tr> <td data-bbox="240 663 428 705">Status:</td> <td data-bbox="428 663 1382 705">CR [band], [split]</td> </tr> </table>			Status:	CR [band], [split]				
Status:	CR [band], [split]							
<p><i>Return:</i></p> <table border="1" data-bbox="240 852 1382 894"> <tr> <td data-bbox="240 852 597 894">CR [band], [split], [freq]</td> <td data-bbox="597 852 1382 894"></td> </tr> </table>			CR [band], [split], [freq]					
CR [band], [split], [freq]								
<p><i>Where:</i></p> <table border="1" data-bbox="240 1041 1382 1157"> <tr> <td data-bbox="240 1041 428 1083">[band]</td> <td data-bbox="428 1041 1382 1083">see Ham Band Table</td> </tr> <tr> <td data-bbox="240 1083 428 1125">[split]</td> <td data-bbox="428 1083 1382 1125">see Split Channel Table.</td> </tr> <tr> <td data-bbox="240 1125 428 1157">[freq]</td> <td data-bbox="428 1125 1382 1157">See Frequency Table</td> </tr> </table>			[band]	see Ham Band Table	[split]	see Split Channel Table.	[freq]	See Frequency Table
[band]	see Ham Band Table							
[split]	see Split Channel Table.							
[freq]	See Frequency Table							
<p><i>Notes:</i></p>								
<p><i>Example:</i></p> <table border="1" data-bbox="240 1451 1382 1598"> <tr> <td data-bbox="240 1451 380 1493">Sent:</td> <td data-bbox="380 1451 740 1493">CR 0,0</td> <td data-bbox="740 1451 1382 1493">Requesting call channel data.</td> </tr> <tr> <td data-bbox="240 1493 380 1598">Return:</td> <td data-bbox="380 1493 740 1598">CR 0,0, 00141990000,6,0,0,0,0, 0,25,09,001,000700000,0</td> <td data-bbox="740 1493 1382 1598">Transceiver returns call channel data.</td> </tr> </table>			Sent:	CR 0,0	Requesting call channel data.	Return:	CR 0,0, 00141990000,6,0,0,0,0, 0,25,09,001,000700000,0	Transceiver returns call channel data.
Sent:	CR 0,0	Requesting call channel data.						
Return:	CR 0,0, 00141990000,6,0,0,0,0, 0,25,09,001,000700000,0	Transceiver returns call channel data.						

CW		Call Channel Write
<i>Description:</i>		
Enters data to the Call channel.		<i>Menu Item #</i> <i>n/a</i>
<i>Function:</i>		
Saves all data associated with the Call channel		
<i>Send:</i>		
Modify:	CW [split],[freq]	
<i>Return:</i>		
CW		
<i>Where:</i>		
[split]	see Split Channel Table	
[freq]	see Frequency Table.	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	CW 0 00141990000,6,0,0,0,0,0, 25,09,001,000700000,0	Requesting call channel data be set to 00141990000,6,0,0,0,0,0,25,09,001,000700000,0 (see Freq Table).
Return:	CW	Transceiver confirms setting.



<b>DATP</b>	<b>Packet Speed</b>
-------------	---------------------

*Description:*

Get or set Packet Speed.

*Menu Item #*  
28

*Function:*

The current packet speed. Options are 1200 or 9600 bps.

*Send:*

Status:	DATP
---------	------

Modify:	DATP [val]
---------	------------

*Return:*

DATP [val]	
------------	--

*Where:*

[val]	see Packet Speed Table
-------	------------------------

*Notes:*

*Example:*

Sent:	DATP	Request Packet Speed.
Return:	DATP 0	Transceiver says Packet Speed in 1200 bps.

Sent:	DATP 1	Request a Packet Speed of 9600 bps.
Return:	DATP 1	Transceiver confirms.

DL	Dual	
<i>Description:</i>		
Gets or sets the dual mode of transceiver.	<i>Menu Item #</i> n/a	
<i>Function:</i>		
Toggle the transceiver from displaying one or two frequencies.		
<i>Send:</i>		
Status:	DL	
Modify:	DL [val]	
<i>Return:</i>		
DL [val]		
<i>Where:</i>		
[val]	see Dual Mode Table	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	DL	Requesting Dual Mode status.
Return:	DL 0	Transceiver says that Dual Mode is single.
Sent:	DL 1	Requesting that Dual Mode be dual.
Return:	DL 1	Confirming that Dual Mode is dual.

<b>DLK</b>	<b>DTMF Lock</b>
------------	------------------

*Description:*

Turns on or off or gets state of the DTMF Lock function.

*Menu Item #*  
14

*Function:*

If the DTMF Lock function is on, the keypad DTMF transmission is disabled.

*Send:*

Status:	DLK
---------	-----

Modify:	DLK [val]
---------	-----------

*Return:*

DLK [val]	
-----------	--

*Where:*

[val]	see Logic Table
-------	-----------------

*Notes:*

*Example:*

Sent:	DLK	Requesting status of DTMF Lock.
Return:	DLK 0	Transceiver says that DTMF Lock is off.

Sent:	DLK 1	Requesting DTMF Lock is on.
Return:	DLK 1	Confirming that DTMF Lock is on.

DM	Get/Set DTMF Memory Number Location													
<p><i>Description:</i></p> <p>Reads or sets one of 10 DTMF memory number locations. <span style="float: right;"><i>Menu Item #</i> 10</span></p>														
<p><i>Function:</i></p> <p>Store a DTMF number in memory.</p>														
<p><i>Send:</i></p> <table border="1" data-bbox="240 663 1382 705"> <tr> <td>Status:</td> <td colspan="2">DM [cc] to get DTMF memory number location.</td> </tr> </table> <table border="1" data-bbox="240 741 1382 783"> <tr> <td>Modify:</td> <td colspan="2">DM [cc], [num] to set number in DTMF memory number location.</td> </tr> </table>			Status:	DM [cc] to get DTMF memory number location.		Modify:	DM [cc], [num] to set number in DTMF memory number location.							
Status:	DM [cc] to get DTMF memory number location.													
Modify:	DM [cc], [num] to set number in DTMF memory number location.													
<p><i>Return:</i></p> <table border="1" data-bbox="240 926 1382 968"> <tr> <td>DM [cc], [num]</td> <td></td> </tr> </table>			DM [cc], [num]											
DM [cc], [num]														
<p><i>Where:</i></p> <table border="1" data-bbox="240 1115 1382 1157"> <tr> <td>[cc]</td> <td>see DTMF Memory Locations.</td> </tr> </table> <table border="1" data-bbox="240 1157 1382 1199"> <tr> <td>[num]</td> <td>see DTMF Table.</td> </tr> </table>			[cc]	see DTMF Memory Locations.	[num]	see DTMF Table.								
[cc]	see DTMF Memory Locations.													
[num]	see DTMF Table.													
<p><i>Notes:</i></p> <p>[num] is a maximum of 16 digits.</p>														
<p><i>Example:</i></p> <table border="1" data-bbox="240 1486 1382 1566"> <tr> <td>Sent:</td> <td>DM 00</td> <td>Requesting the DTMF number stored at 00.</td> </tr> <tr> <td>Return:</td> <td>DM 00,</td> <td>Transceiver says that 00 is an empty location.</td> </tr> </table> <table border="1" data-bbox="240 1602 1382 1682"> <tr> <td>Sent:</td> <td>DM 01,18005551212</td> <td>Requesting that DTMF 01 be 18005551212.</td> </tr> <tr> <td>Return:</td> <td>DM 00,18005551212</td> <td>Confirming that DTMF 01 is 18005551212.</td> </tr> </table>			Sent:	DM 00	Requesting the DTMF number stored at 00.	Return:	DM 00,	Transceiver says that 00 is an empty location.	Sent:	DM 01,18005551212	Requesting that DTMF 01 be 18005551212.	Return:	DM 00,18005551212	Confirming that DTMF 01 is 18005551212.
Sent:	DM 00	Requesting the DTMF number stored at 00.												
Return:	DM 00,	Transceiver says that 00 is an empty location.												
Sent:	DM 01,18005551212	Requesting that DTMF 01 be 18005551212.												
Return:	DM 00,18005551212	Confirming that DTMF 01 is 18005551212.												

<b>DMN</b>	<b>Get/Set DTMF Memory Name Location</b>
------------	--

*Description:*

Reads or sets one of 10 DTMF memory name locations. *Menu Item #  
10*

*Function:*

Store a name to be associated with a DTMF number in memory.

*Send:*

Status:	DMN [cc] to get DTMF memory name location.
---------	--

Modify:	DMN [cc], [name] to set name in DTMF memory name location.
---------	--

*Return:*

DM [cc], [name]	
-----------------	--

*Where:*

[cc]	see DTMF Memory Locations.
------	----------------------------

[name]	see Character Table.
--------	----------------------

*Notes:*

[name] is a maximum of 8 characters.

*Example:*

Sent:	DMN 01	Requesting the name contents of DTMF 01.
Return:	DMN 01,John	Transceiver says that DTMF 01 contains John

Sent:	DMN 09,Home	Requesting that DTMF 09 contents be home.
Return:	DMN 09,Home	Confirming that a DTMF 09 content is home.

DW	Down							
<p><i>Description:</i></p> <p>Instructs transceiver to move down. <span style="float: right;"><i>Menu Item #</i> n/a</span></p>								
<p><i>Function:</i></p> <p>Moves down one memory channel in MR mode or down one frequency step in VFO mode.</p>								
<p><i>Send:</i></p> <table border="1" data-bbox="240 701 1382 741"> <tr> <td data-bbox="240 701 428 741">Modify:</td> <td data-bbox="428 701 1382 741">DW</td> </tr> </table>			Modify:	DW				
Modify:	DW							
<p><i>Return:</i></p> <table border="1" data-bbox="240 888 1382 928"> <tr> <td data-bbox="240 888 573 928">DW</td> <td data-bbox="573 888 1382 928"></td> </tr> </table>			DW					
DW								
<p><i>Where:</i></p> <table border="1" data-bbox="240 1073 1382 1113"> <tr> <td data-bbox="240 1073 428 1113">n/a</td> <td data-bbox="428 1073 1382 1113"></td> </tr> </table>			n/a					
n/a								
<p><i>Notes:</i></p> <p>Same as rotating Tuning Control one click counter-clockwise. See UP.</p>								
<p><i>Example:</i></p> <table border="1" data-bbox="240 1409 1382 1486"> <tr> <td data-bbox="240 1409 380 1444">Sent:</td> <td data-bbox="380 1409 743 1444">DW</td> <td data-bbox="743 1409 1382 1444">Requesting that VFO move down.</td> </tr> <tr> <td data-bbox="240 1444 380 1486">Return:</td> <td data-bbox="380 1444 743 1486">DW</td> <td data-bbox="743 1444 1382 1486">Transceiver confirming that VFO moves down.</td> </tr> </table>			Sent:	DW	Requesting that VFO move down.	Return:	DW	Transceiver confirming that VFO moves down.
Sent:	DW	Requesting that VFO move down.						
Return:	DW	Transceiver confirming that VFO moves down.						

ELK	Tune Enable	
<i>Description:</i>		
Get or set Tune Enable Flag.	<i>Menu Item # 07</i>	
<i>Function:</i>		
If transceiver is locked and Tune Enable in on, Tuning Control may be used to change frequency.		
<i>Send:</i>		
Status:	ELK	
Modify:	ELK [val]	
<i>Return:</i>		
ELK [val]		
<i>Where:</i>		
[val]	See Logic Table	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	ELK	Requesting status of Tune Enable.
Return:	ELK 0	Transceiver says that Tune Enable is off.
Sent:	ELK 1	Request that Tune Enable be set to on.
Return:	ELK 1	Confirming that Tune Enable is set to on.

FL	Frequency Limits							
<p><i>Description:</i></p> <p>Returns list of band limits. <span style="float: right;"><i>Menu Item #</i> <i>n/a</i></span></p> <p>Returns list of band limits.</p>								
<p><i>Function:</i></p> <p>Returns a list of band limits.</p>								
<p><i>Send:</i></p> <table border="1" data-bbox="240 701 1382 741"> <tr> <td data-bbox="240 701 428 741">Status:</td> <td data-bbox="428 701 1382 741">FL [band]</td> </tr> </table>			Status:	FL [band]				
Status:	FL [band]							
<p><i>Return:</i></p> <table border="1" data-bbox="240 888 1382 928"> <tr> <td data-bbox="240 888 573 928">FL [band], [list]</td> <td data-bbox="573 888 1382 928"></td> </tr> </table>			FL [band], [list]					
FL [band], [list]								
<p><i>Where:</i></p> <table border="1" data-bbox="240 1075 1382 1155"> <tr> <td data-bbox="240 1075 428 1115">[band]</td> <td data-bbox="428 1075 1382 1115">see Band Switch Table</td> </tr> <tr> <td data-bbox="240 1115 428 1155">[list]</td> <td data-bbox="428 1115 1382 1155">see Band Limits Table</td> </tr> </table>			[band]	see Band Switch Table	[list]	see Band Limits Table		
[band]	see Band Switch Table							
[list]	see Band Limits Table							
<p><i>Notes:</i></p>								
<p><i>Example:</i></p> <table border="1" data-bbox="240 1446 1382 1598"> <tr> <td data-bbox="240 1446 380 1486">Sent:</td> <td data-bbox="380 1446 740 1486">FL 0</td> <td data-bbox="740 1446 1382 1486">Requesting frequency limits of A band.</td> </tr> <tr> <td data-bbox="240 1486 380 1598">Return:</td> <td data-bbox="380 1486 740 1598">FL 0,00137,00174, 00216,00260, 00410,00470</td> <td data-bbox="740 1486 1382 1598">Transceiver returns limits of A band.</td> </tr> </table>			Sent:	FL 0	Requesting frequency limits of A band.	Return:	FL 0,00137,00174, 00216,00260, 00410,00470	Transceiver returns limits of A band.
Sent:	FL 0	Requesting frequency limits of A band.						
Return:	FL 0,00137,00174, 00216,00260, 00410,00470	Transceiver returns limits of A band.						



FQ		Current Frequency and Step Size
<i>Description:</i>		
Returns or sets the current display frequency and step size.		<i>Menu Item #</i> n/a
<i>Function:</i>		
Returns or sets the current display frequency and step size.		
<i>Send:</i>		
Status:	FQ	
Modify:	FQ [freq], [step]	
<i>Return:</i>		
FQ [freq], [step]		
<i>Where:</i>		
[freq]	is an eleven (11) digit frequency in Hz.	
[step]	see Step Size Table.	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	FQ	Requesting current frequency and step size.
Return:	FQ 00444150000,8	Transceiver returns 444.150 MHz with 25.0 kHz step size.
Sent:	FQ 00142000000,0	Requesting that transceiver be set to 142.000 MHz with a 5.0 kHz step size.
Return:	FQ 00142000000,0	Transceiver confirms.

FST	Fine Tuning Step Size	
<i>Description:</i>		
Gets or sets the fine-tuning step size.	<i>Menu Item #</i> n/a	
<i>Function:</i>		
Selects fine tuning frequency step from 33 Hz, 100 Hz, 500 Hz, or 1000 Hz.		
<i>Send:</i>		
Status:	FST	
Modify:	FST [val]	
<i>Return:</i>		
FST [val]		
<i>Where:</i>		
[val]	see Fine Tuning Step Size Table	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	FST	Request fine-tuning step size.
Return:	FST 0	Transceiver says that step size is 33 Hz.
Sent:	FST 3	Request that fine tuning step size is 500 Hz.
Return:	FST 3	Transceiver confirms.

ID	Identity of Radio							
<p><i>Description:</i></p> <p>Returns the radio identification. <span style="float: right;"><i>Menu Item #</i> <i>n/a</i></span></p>								
<p><i>Function:</i></p> <p>Returns the radio type as a string. Can be used to validate that the radio is in communication with computer.</p>								
<p><i>Send:</i></p> <table border="1" data-bbox="240 701 1383 741"> <tr> <td data-bbox="240 701 428 741">Status:</td> <td data-bbox="428 701 1383 741">ID</td> </tr> </table>			Status:	ID				
Status:	ID							
<p><i>Return:</i></p> <table border="1" data-bbox="240 888 1383 928"> <tr> <td data-bbox="240 888 573 928">ID [id]</td> <td data-bbox="573 888 1383 928"></td> </tr> </table>			ID [id]					
ID [id]								
<p><i>Where:</i></p> <table border="1" data-bbox="240 1073 1383 1113"> <tr> <td data-bbox="240 1073 428 1113">n/a</td> <td data-bbox="428 1073 1383 1113"></td> </tr> </table>			n/a					
n/a								
<p><i>Notes:</i></p>								
<p><i>Example:</i></p> <table border="1" data-bbox="240 1409 1383 1486"> <tr> <td data-bbox="240 1409 380 1446">Sent:</td> <td data-bbox="380 1409 743 1446">ID</td> <td data-bbox="743 1409 1383 1446">Request ID of transceiver.</td> </tr> <tr> <td data-bbox="240 1446 380 1486">Return:</td> <td data-bbox="380 1446 743 1486">ID TH-F6</td> <td data-bbox="743 1446 1383 1486">Transceiver says that it is a TH-F6.</td> </tr> </table>			Sent:	ID	Request ID of transceiver.	Return:	ID TH-F6	Transceiver says that it is a TH-F6.
Sent:	ID	Request ID of transceiver.						
Return:	ID TH-F6	Transceiver says that it is a TH-F6.						

LAN	Get/Set Default Language	
<i>Description:</i>		
Displays or sets the default language.		<i>Menu Item #</i> 27
<i>Function:</i>		
For selecting either English or Japanese (Katakana) for menu descriptions.		
<i>Send:</i>		
Status:	LAN to get language.	
Modify:	LAN [lang] to set language.	
<i>Return:</i>		
LAN [lang]		
<i>Where:</i>		
[lang]	see Language Table.	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	LAN	Request language.
Return:	LAN 0	Transceiver says language is English.
Sent:	LAN 1	Request that language be Japanese.
Return:	LAN 1	Transceiver confirms that language is Japanese.

LK	Lock													
<p><i>Description:</i></p> <p>Gets or sets the radio lock function. <span style="float: right;"><i>Menu Item #</i> n/a</span></p>														
<p><i>Function:</i></p> <p>The lock function disables most of the keys to prevent accidental activation of a function.</p>														
<p><i>Send:</i></p> <table border="1" data-bbox="240 701 1383 743"> <tr> <td>Status:</td> <td>LK</td> </tr> </table> <table border="1" data-bbox="240 779 1383 821"> <tr> <td>Modify:</td> <td>LK [val]</td> </tr> </table>			Status:	LK	Modify:	LK [val]								
Status:	LK													
Modify:	LK [val]													
<p><i>Return:</i></p> <table border="1" data-bbox="240 968 1383 1010"> <tr> <td>LK [val]</td> <td></td> </tr> </table>			LK [val]											
LK [val]														
<p><i>Where:</i></p> <table border="1" data-bbox="240 1152 1383 1194"> <tr> <td>[val]</td> <td>see Lock Table</td> </tr> </table>			[val]	see Lock Table										
[val]	see Lock Table													
<p><i>Notes:</i></p>														
<p><i>Example:</i></p> <table border="1" data-bbox="240 1486 1383 1562"> <tr> <td>Sent:</td> <td>LK</td> <td>Requesting status of lock.</td> </tr> <tr> <td>Return:</td> <td>LK 0</td> <td>Transceiver says that it is unlocked.</td> </tr> </table> <table border="1" data-bbox="240 1598 1383 1673"> <tr> <td>Sent:</td> <td>LK 1</td> <td>Requesting transceiver to be locked.</td> </tr> <tr> <td>Return:</td> <td>LK 1</td> <td>Confirming that transceiver is locked.</td> </tr> </table>			Sent:	LK	Requesting status of lock.	Return:	LK 0	Transceiver says that it is unlocked.	Sent:	LK 1	Requesting transceiver to be locked.	Return:	LK 1	Confirming that transceiver is locked.
Sent:	LK	Requesting status of lock.												
Return:	LK 0	Transceiver says that it is unlocked.												
Sent:	LK 1	Requesting transceiver to be locked.												
Return:	LK 1	Confirming that transceiver is locked.												

LMP	Lamp													
<p><i>Description:</i></p> <p>Turns on or off or gets state of the light. <span style="float: right;"><i>Menu Item #</i> <i>n/a</i></span></p>														
<p><i>Function:</i></p> <p>Used to illuminate the transceiver.</p>														
<p><i>Send:</i></p> <table border="1" data-bbox="240 663 1382 705"> <tr> <td>Status:</td> <td colspan="2">LMP</td> </tr> </table> <table border="1" data-bbox="240 741 1382 783"> <tr> <td>Modify:</td> <td colspan="2">LMP [val]</td> </tr> </table>			Status:	LMP		Modify:	LMP [val]							
Status:	LMP													
Modify:	LMP [val]													
<p><i>Return:</i></p> <table border="1" data-bbox="240 926 1382 968"> <tr> <td>LMP [val]</td> <td colspan="2"></td> </tr> </table>			LMP [val]											
LMP [val]														
<p><i>Where:</i></p> <table border="1" data-bbox="240 1115 1382 1157"> <tr> <td>[val]</td> <td colspan="2">see Logic Table</td> </tr> </table>			[val]	see Logic Table										
[val]	see Logic Table													
<p><i>Notes:</i></p>														
<p><i>Example:</i></p> <table border="1" data-bbox="240 1451 1382 1524"> <tr> <td>Sent:</td> <td>LMP</td> <td>Requesting status of transceiver lamp.</td> </tr> <tr> <td>Return:</td> <td>LMP 0</td> <td>Transceiver says lamp is off.</td> </tr> </table> <table border="1" data-bbox="240 1560 1382 1633"> <tr> <td>Sent:</td> <td>LMP 1</td> <td>Requesting lamp to be on.</td> </tr> <tr> <td>Return:</td> <td>LMP 1</td> <td>Confirming that lamp in on.</td> </tr> </table>			Sent:	LMP	Requesting status of transceiver lamp.	Return:	LMP 0	Transceiver says lamp is off.	Sent:	LMP 1	Requesting lamp to be on.	Return:	LMP 1	Confirming that lamp in on.
Sent:	LMP	Requesting status of transceiver lamp.												
Return:	LMP 0	Transceiver says lamp is off.												
Sent:	LMP 1	Requesting lamp to be on.												
Return:	LMP 1	Confirming that lamp in on.												

MC	Memory Channel	
<i>Description:</i>		
Switch display to memory channel or get memory channel of display.		<i>Menu Item #</i> n/a
<i>Function:</i>		
Returns the memory channel stored in the display or will switch the display to a particular memory channel.		
<i>Send:</i>		
Status:	MC [band]	
Modify:	MC [band], [name]	
<i>Return:</i>		
MC [band], [name]		
<i>Where:</i>		
[band]	see Band Switch Table	
[name]	see Memory Channel Table.	
<i>Notes:</i>		
Display must be in MR mode (not VFO or CALL). Can use VMC command to get to MR mode. If command returns an “N”, transceiver is probably not set to MR mode.		
<i>Example:</i>		
Sent:	MC 0	Requesting memory channel for A band.
Return:	MC 0,005	Transceiver says A band set to 005.
Sent:	MC 1,299	Set B Band to memory channel 299,
Return:	MC 1,299	Transceiver confirms that B band set to 299.

MD	Modulation Mode	
<i>Description:</i>		
Set or returns current modulation mode.	<i>Menu Item #</i> <i>n/a</i>	
<i>Function:</i>		
Set or returns the modulation mode of the current active band (A/B).		
<i>Send:</i>		
Status:	MD	
Modify:	MD [mode]	
<i>Return:</i>		
MD [mode]		
<i>Where:</i>		
[mode]	See Modulation Mode Table.	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	MD	Request current modulation mode
Return:	MD 0	Transceiver say mode is FM.
Sent:	MD 2	Request that mode be set to AM.
Return:	MD 2	Transceiver says that mode is AM.



MES	Get/Set Power on Message	
<i>Description:</i>		
Displays or sets the power on greeting message.		<i>Menu Item # 15</i>
<i>Function:</i>		
The greeting message that is displayed when transceiver is turned on.		
<i>Send:</i>		
Status:	MES to get greeting	
Modify:	MES [message] to set greeting	
<i>Return:</i>		
MES [message]		
<i>Where:</i>		
[message]	see Character Table.	
<i>Notes:</i>		
[message] is a maximum of eight (8) characters.		
<i>Example:</i>		
Sent:	MES	Request power on message.
Return:	MES John May	Transceiver says that message is "John May".
Sent:	MES K6MAY	Requesting that message be "K6MAY".
Return:	MES K6MAY	Transceiver confirms new message.

MGL		Memory Group Link
<i>Description:</i>		
Gets or sets the Memory Group Link Channels.		<i>Menu Item #</i> 02
<i>Function:</i>		
Memory channels are divided into eight (8) groups. Memory Group Link is used to link two or more groups for scanning.		
<i>Send:</i>		
Status:	MGL	
Modify:	MGL [val]	
<i>Return:</i>		
MGL [val]		
<i>Where:</i>		
[val]	Are the linked memory groups (0-7). All groups not displayed are assumed to be free.	
<i>Notes:</i>		
<i>Example:</i> (note: * = a space character)		
Sent:	MGL	Requesting the status of memory group link.
Return:	MGL**1*3*5*7	Transceiver says that 1,3,5,7 groups are linked.
Sent:	MGL***2***6*	Requesting that groups 2 and 6 be linked.
Return:	MGL***2***6*	Transceiver confirms.

MNA	Memory Name	
<i>Description:</i>		
Get or set name of memory channel.	<i>Menu Item #</i> n/a	
<i>Function:</i>		
Get or set the name of a memory channel.		
<i>Send:</i>		
Status:	MNA	
Modify:	MNA [mem],[name]	
<i>Return:</i>		
MNA [mem],[name]		
<i>Where:</i>		
[mem]	see Memory Channel Table.	
[name]	see Character Table.	
<i>Notes:</i>		
[name] is a maximum of eight (8) characters.		
<i>Example:</i>		
Sent:	MNA 001	Request name of memory channel 001
Return:	MNA 001,RPTR	Transceiver says 001 is “RPTR”
Sent:	MNA 256,NASA-TV	Request that channel 256 be “NASA-TV”.
Return:	MNA 256,NASA-TV	Transceiver says channel 256 is “NASA-TV”.

MNF	Memory Name Frequency													
<p><i>Description:</i></p> <p>Set or get the name/frequency mode of display. <span style="float: right;"><i>Menu Item #</i> <i>n/a</i></span></p>														
<p><i>Function:</i></p> <p>Gets or sets the display mode. Display can be a numeric frequency or an alphanumeric name.</p>														
<p><i>Send:</i></p> <table border="1" data-bbox="240 701 1382 741"> <tr> <td>Status:</td> <td colspan="2">MNF</td> </tr> </table> <table border="1" data-bbox="240 779 1382 819"> <tr> <td>Modify:</td> <td colspan="2">MNF [val]</td> </tr> </table>			Status:	MNF		Modify:	MNF [val]							
Status:	MNF													
Modify:	MNF [val]													
<p><i>Return:</i></p> <table border="1" data-bbox="240 968 1382 1008"> <tr> <td>MNF [val]</td> <td colspan="2"></td> </tr> </table>			MNF [val]											
MNF [val]														
<p><i>Where:</i></p> <table border="1" data-bbox="240 1157 1382 1197"> <tr> <td>[val]</td> <td colspan="2">See Name/Frequency Mode Table</td> </tr> </table>			[val]	See Name/Frequency Mode Table										
[val]	See Name/Frequency Mode Table													
<p><i>Notes:</i></p> <p>Changes mode of both A and B channels.</p>														
<p><i>Example:</i></p> <table border="1" data-bbox="240 1486 1382 1564"> <tr> <td>Sent:</td> <td>MNF</td> <td>Requesting the Name/Freq status of display.</td> </tr> <tr> <td>Return:</td> <td>MNF 0</td> <td>Transceiver says display is in Name mode.</td> </tr> </table> <table border="1" data-bbox="240 1602 1382 1680"> <tr> <td>Sent:</td> <td>MNF 1</td> <td>Request that display be in Frequency mode.</td> </tr> <tr> <td>Return:</td> <td>MNF 1</td> <td>Confirming that display is in Frequency Mode.</td> </tr> </table>			Sent:	MNF	Requesting the Name/Freq status of display.	Return:	MNF 0	Transceiver says display is in Name mode.	Sent:	MNF 1	Request that display be in Frequency mode.	Return:	MNF 1	Confirming that display is in Frequency Mode.
Sent:	MNF	Requesting the Name/Freq status of display.												
Return:	MNF 0	Transceiver says display is in Name mode.												
Sent:	MNF 1	Request that display be in Frequency mode.												
Return:	MNF 1	Confirming that display is in Frequency Mode.												

<b>MR</b>	<b>Memory Channel Read</b>
-----------	----------------------------

*Description:*

Reads a memory channel.

*Menu Item #*  
n/a

*Function:*

Reads memory channel data. May also be used to check for a split channel.

*Send:*

Status:	MR [split], [mem]
---------	-------------------

*Return:*

MR [split], [mem],[freq]	
--------------------------	--

*Where:*

[split]	see Split Channel Table.
[mem]	see Memory Channel Table
[freq]	see Frequency Table.

*Notes:*

N is returned for an empty memory location.

*Example:*

Sent:	MR 0,001	Requesting to read memory location 001.
Return:	MR 0,001, 00146655000,0,2,0,1,0,0, 24,08,000,000600000,0,0	Transceiver returns values associated with location 001.

MRM	Memory Recall Method													
<p><i>Description:</i></p> <p>Gets or sets the memory recall method. <span style="float: right;"><i>Menu Item #</i> 03</span></p>														
<p><i>Function:</i></p> <p>Used to configure transceiver to recall only the memory channels for the current operating band.</p>														
<p><i>Send:</i></p> <table border="1" data-bbox="240 701 1382 741"> <tr> <td>Status:</td> <td colspan="2">MRM</td> </tr> </table> <table border="1" data-bbox="240 779 1382 819"> <tr> <td>Modify:</td> <td colspan="2">MRM [val]</td> </tr> </table>			Status:	MRM		Modify:	MRM [val]							
Status:	MRM													
Modify:	MRM [val]													
<p><i>Return:</i></p> <table border="1" data-bbox="240 963 1382 1003"> <tr> <td>MRM [val]</td> <td colspan="2"></td> </tr> </table>			MRM [val]											
MRM [val]														
<p><i>Where:</i></p> <table border="1" data-bbox="240 1152 1382 1192"> <tr> <td>[val]</td> <td colspan="2">see Memory Recall Table.</td> </tr> </table>			[val]	see Memory Recall Table.										
[val]	see Memory Recall Table.													
<p><i>Notes:</i></p>														
<p><i>Example:</i></p> <table border="1" data-bbox="240 1486 1382 1562"> <tr> <td>Sent:</td> <td>MRM</td> <td>Requesting current Memory Recall Mode.</td> </tr> <tr> <td>Return:</td> <td>MRM 0</td> <td>Transceiver says the MRM is “All Bands”.</td> </tr> </table> <table border="1" data-bbox="240 1600 1382 1675"> <tr> <td>Sent:</td> <td>MRM 1</td> <td>Request that MRM be “Current Band”.</td> </tr> <tr> <td>Return:</td> <td>MRM 1</td> <td>Confirming that MRM is “Current Band”.</td> </tr> </table>			Sent:	MRM	Requesting current Memory Recall Mode.	Return:	MRM 0	Transceiver says the MRM is “All Bands”.	Sent:	MRM 1	Request that MRM be “Current Band”.	Return:	MRM 1	Confirming that MRM is “Current Band”.
Sent:	MRM	Requesting current Memory Recall Mode.												
Return:	MRM 0	Transceiver says the MRM is “All Bands”.												
Sent:	MRM 1	Request that MRM be “Current Band”.												
Return:	MRM 1	Confirming that MRM is “Current Band”.												

<b>MW</b>	<b>Memory Write</b>
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*Description:*

Store memory channel.	<i>Menu Item # n/a</i>
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*Function:*

Command to store frequency and data in a memory channel.

*Send:*

Modify:	MW [split],[mem],[freq]
---------	-------------------------

*Return:*

MW [split],[mem],[freq]	
-------------------------	--

*Where:*

[split]	see Split Channel Table.
[mem]	see Memory Channel Table
[freq]	see Frequency Table.

*Notes:*

*Example:*

Sent:	MW 0,020, 00107980000,0,0,0,0,0,0, 00,00,000,000000000,1,0	Set memory channel 020 to 107.98 MHz with a 5.0 kHz step size. No offset, reverse, tone. CTCSS, DCS or lockout. In FM mode.
Return:	MW	Transceiver confirms.

NAR		FM Narrow	
<i>Description:</i>			
Gets or sets the Narrow FM mode of a band.			<i>Menu Item #</i> 29
<i>Function:</i>			
Selects between: Off - wide band FM (5 KHz) deviation or On - narrow band FM (2.5 KHz) deviation.			
<i>Send:</i>			
Status:	NAR [band]		
Modify:	NAR [band],[val]		
<i>Return:</i>			
NAR [band],[val]			
<i>Where:</i>			
[band]	see Ham Band Table.		
[val]	see Logic Table.		
<i>Notes:</i>			
<i>Example:</i>			
Sent:	NAR 0	Request status of 2m FM.	
Return:	NAR 0,0	Transceiver says FM is wide.	
Sent:	NAR 1,1	Request that 1.25 m band be narrow FM.	
Return:	NAR 1,1	Transceiver confirms	



NSFT		Beat Shift	
<i>Description:</i>			
Set or get Beat Shift function.		<i>Menu Item #</i> 25	
<i>Function:</i>			
Used the reduce harmonics from microprocessors clock oscillator.			
<i>Send:</i>			
Status:	NSFT		
Modify:	NSFT [val]		
<i>Return:</i>			
NSFT [val]			
<i>Where:</i>			
[val]	see Logic Table.		
<i>Notes:</i>			
<i>Example:</i>			
Sent:	NSFT	Request status of Beat Shift function.	
Return:	NSFT 1	Transceiver says the Beat Shift function is on.	
Sent:	NSFT 0	Request that the beat Shift function be on.	
Return:	NSFT 0	Transceiver confirms.	

PC	Power Control	
<i>Description:</i>		
Sets the transmit power on a band.		<i>Menu Item #</i> n/a
<i>Function:</i>		
Changes the power output level on the current band.		
<i>Send:</i>		
Status:	PC [band]	
Modify:	PC [band], [pwr]	
<i>Return:</i>		
PC [band], [pwr]		
<i>Where:</i>		
[band]	see Band Switch Table	
[pwr]	see Power Level Table	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	PC 0	Requesting the power output for the 2 m band.
Return:	PC 0,0	Transceiver says the power output is H.
Sent:	PC 1,2	Set the power output to EL for 1.25 m band.
Return:	PC 1,2	Transceiver confirms.

PT	DTMF Pause													
<p><i>Description:</i></p> <p>Gets or sets the DTMF pause duration. <span style="float: right;"><i>Menu Item #</i> 13</span></p>														
<p><i>Function:</i></p> <p>Selects the pause duration for a space character entered into a DTMF number field.</p>														
<p><i>Send:</i></p> <table border="1" data-bbox="240 701 1382 741"> <tr> <td>Status:</td> <td colspan="2">PT</td> </tr> </table> <table border="1" data-bbox="240 779 1382 819"> <tr> <td>Modify:</td> <td colspan="2">PT [val]</td> </tr> </table>			Status:	PT		Modify:	PT [val]							
Status:	PT													
Modify:	PT [val]													
<p><i>Return:</i></p> <table border="1" data-bbox="240 968 1382 1008"> <tr> <td>PT [val]</td> <td colspan="2"></td> </tr> </table>			PT [val]											
PT [val]														
<p><i>Where:</i></p> <table border="1" data-bbox="240 1152 1382 1192"> <tr> <td>[val]</td> <td colspan="2">see DTMF Pause Table</td> </tr> </table>			[val]	see DTMF Pause Table										
[val]	see DTMF Pause Table													
<p><i>Notes:</i></p>														
<p><i>Example:</i></p> <table border="1" data-bbox="240 1486 1382 1564"> <tr> <td>Sent:</td> <td>PT</td> <td>Request DTMF pause duration.</td> </tr> <tr> <td>Return:</td> <td>PT 2</td> <td>Transceiver says pause duration is 500 ms.</td> </tr> </table> <table border="1" data-bbox="240 1602 1382 1680"> <tr> <td>Sent:</td> <td>PT 5</td> <td>Request that pause duration be 1500 ms.</td> </tr> <tr> <td>Return:</td> <td>PT 5</td> <td>Confirming a pause duration of 1500 ms.</td> </tr> </table>			Sent:	PT	Request DTMF pause duration.	Return:	PT 2	Transceiver says pause duration is 500 ms.	Sent:	PT 5	Request that pause duration be 1500 ms.	Return:	PT 5	Confirming a pause duration of 1500 ms.
Sent:	PT	Request DTMF pause duration.												
Return:	PT 2	Transceiver says pause duration is 500 ms.												
Sent:	PT 5	Request that pause duration be 1500 ms.												
Return:	PT 5	Confirming a pause duration of 1500 ms.												

PV	Program VFO Limits													
<p><i>Description:</i></p> <p>Displays the VFO limits for a band. <span style="float: right;"><i>Menu Item #</i> 04</span></p>														
<p><i>Function:</i></p> <p>Displays a list of the band limits for A and B bands.</p>														
<p><i>Send:</i></p> <table border="1" data-bbox="240 663 1385 705"> <tr> <td>Status:</td> <td>PV [band]</td> </tr> </table> <table border="1" data-bbox="240 741 1385 783"> <tr> <td>Modify:</td> <td>PV [band],[f1], [f2]</td> </tr> </table>			Status:	PV [band]	Modify:	PV [band],[f1], [f2]								
Status:	PV [band]													
Modify:	PV [band],[f1], [f2]													
<p><i>Return:</i></p> <table border="1" data-bbox="240 926 1385 968"> <tr> <td>PV [band],[f1], [f2]</td> <td></td> </tr> </table>			PV [band],[f1], [f2]											
PV [band],[f1], [f2]														
<p><i>Where:</i></p> <table border="1" data-bbox="240 1115 1385 1230"> <tr> <td>[band]</td> <td>see Band Table. Only used on A band.</td> </tr> <tr> <td>[f1], [f2]</td> <td>is a five (5)-digit frequency representing the lower and upper frequency limits.</td> </tr> </table>			[band]	see Band Table. Only used on A band.	[f1], [f2]	is a five (5)-digit frequency representing the lower and upper frequency limits.								
[band]	see Band Table. Only used on A band.													
[f1], [f2]	is a five (5)-digit frequency representing the lower and upper frequency limits.													
<p><i>Notes:</i></p> <p>This sets the limits used during VFO scans in the band. The PV command appears to be volatile from commands set from the computer. That is, the VFO limits remain until power is turned off. Using the keypad and joystick, you can see that the limits have been changed. But the limits revert back to their previous values when power to the radio is turned off.</p>														
<p><i>Example:</i></p> <table border="1" data-bbox="240 1671 1385 1745"> <tr> <td>Sent:</td> <td>PV 0</td> <td>Request VFO limit of 2 m band.</td> </tr> <tr> <td>Return:</td> <td>PV 0,00137,00173</td> <td>Transceiver says it's 137-173 MHz.</td> </tr> </table> <table border="1" data-bbox="240 1787 1385 1860"> <tr> <td>Sent:</td> <td>PV 1,00216,00259</td> <td>Set VFO limits of 1.25 m band.</td> </tr> <tr> <td>Return:</td> <td>PV 1,00216,00259</td> <td>Transceiver confirms limits of 216-259 MHz.</td> </tr> </table>			Sent:	PV 0	Request VFO limit of 2 m band.	Return:	PV 0,00137,00173	Transceiver says it's 137-173 MHz.	Sent:	PV 1,00216,00259	Set VFO limits of 1.25 m band.	Return:	PV 1,00216,00259	Transceiver confirms limits of 216-259 MHz.
Sent:	PV 0	Request VFO limit of 2 m band.												
Return:	PV 0,00137,00173	Transceiver says it's 137-173 MHz.												
Sent:	PV 1,00216,00259	Set VFO limits of 1.25 m band.												
Return:	PV 1,00216,00259	Transceiver confirms limits of 216-259 MHz.												



RBN	Set Band	
<i>Description:</i>		
Displays or sets the current band, when in VFO mode.		<i>Menu Item #</i> n/a
<i>Function:</i>		
Gets or sets the current band. Transceiver must be in VFO mode.		
<i>Send:</i>		
Status:	RBN	
Modify:	RBN [band]	
<i>Return:</i>		
RBN [band]		
<i>Where:</i>		
[band]	see Band Table	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	RBN	Get current band.
Return:	RBN 0	Current band is 2 m.
Sent:	RBN A	Set current band to VHF-TV.
Return:	RBN A	Transceiver confirms.

RX	Receive							
<p><i>Description:</i></p> <p>Switches transceiver to receive mode. <span style="float: right;"><i>Menu Item #</i> n/a</span></p>								
<p><i>Function:</i></p> <p>Sets transceiver to receive.</p>								
<p><i>Send:</i></p> <table border="1" data-bbox="240 663 1383 705"> <tr> <td data-bbox="240 663 428 705">Modify:</td> <td data-bbox="428 663 1383 705">RX</td> </tr> </table>			Modify:	RX				
Modify:	RX							
<p><i>Return:</i></p> <table border="1" data-bbox="240 852 1383 894"> <tr> <td data-bbox="240 852 571 894">RX</td> <td data-bbox="571 852 1383 894"></td> </tr> </table>			RX					
RX								
<p><i>Where:</i></p> <table border="1" data-bbox="240 1035 1383 1077"> <tr> <td data-bbox="240 1035 428 1077">n/a</td> <td data-bbox="428 1035 1383 1077"></td> </tr> </table>			n/a					
n/a								
<p><i>Notes:</i></p>								
<p><i>Example:</i></p> <table border="1" data-bbox="240 1371 1383 1455"> <tr> <td data-bbox="240 1371 380 1413">Sent:</td> <td data-bbox="380 1371 743 1413">RX</td> <td data-bbox="743 1371 1383 1413">Set transceiver to receiver mode.</td> </tr> <tr> <td data-bbox="240 1413 380 1455">Return:</td> <td data-bbox="380 1413 743 1455">RX</td> <td data-bbox="743 1413 1383 1455">Transceiver confirms.</td> </tr> </table>			Sent:	RX	Set transceiver to receiver mode.	Return:	RX	Transceiver confirms.
Sent:	RX	Set transceiver to receiver mode.						
Return:	RX	Transceiver confirms.						

SCR	Scan Resume													
<p><i>Description:</i></p> <p>Get or set the Scan Resume method. <span style="float: right;"><i>Menu Item # 01</i></span></p>														
<p><i>Function:</i></p> <p>The method used the continue scanning after the transceiver stops on a detected signal.</p>														
<p><i>Send:</i></p> <table border="1" data-bbox="240 663 1382 705"> <tr> <td>Status:</td> <td colspan="2">SCR</td> </tr> </table> <table border="1" data-bbox="240 741 1382 783"> <tr> <td>Modify:</td> <td colspan="2">SCR [val]</td> </tr> </table>			Status:	SCR		Modify:	SCR [val]							
Status:	SCR													
Modify:	SCR [val]													
<p><i>Return:</i></p> <table border="1" data-bbox="240 926 1382 968"> <tr> <td>SCR [val]</td> <td colspan="2"></td> </tr> </table>			SCR [val]											
SCR [val]														
<p><i>Where:</i></p> <table border="1" data-bbox="240 1115 1382 1157"> <tr> <td>[val]</td> <td colspan="2">see Scan Resume Table</td> </tr> </table>			[val]	see Scan Resume Table										
[val]	see Scan Resume Table													
<p><i>Notes:</i></p>														
<p><i>Example:</i></p> <table border="1" data-bbox="240 1451 1382 1524"> <tr> <td>Sent:</td> <td>SCR</td> <td>Request scan resume method.</td> </tr> <tr> <td>Return:</td> <td>SCR 0</td> <td>Transceiver says it is Time.</td> </tr> </table> <table border="1" data-bbox="240 1560 1382 1633"> <tr> <td>Sent:</td> <td>SCR 2</td> <td>Request that scan resume method be Seek.</td> </tr> <tr> <td>Return:</td> <td>SCR 2</td> <td>Transceiver confirms.</td> </tr> </table>			Sent:	SCR	Request scan resume method.	Return:	SCR 0	Transceiver says it is Time.	Sent:	SCR 2	Request that scan resume method be Seek.	Return:	SCR 2	Transceiver confirms.
Sent:	SCR	Request scan resume method.												
Return:	SCR 0	Transceiver says it is Time.												
Sent:	SCR 2	Request that scan resume method be Seek.												
Return:	SCR 2	Transceiver confirms.												



SQ	Squelch													
<p><i>Description:</i></p> <p>Displays or sets the squelch level. <span style="float: right;"><i>Menu Item #</i> n/a</span></p>														
<p><i>Function:</i></p> <p>Sets or gets the squelch level for a band.</p>														
<p><i>Send:</i></p> <table border="1" data-bbox="240 663 1382 705"> <tr> <td>Status:</td> <td colspan="2">SQ [band]</td> </tr> </table> <table border="1" data-bbox="240 741 1382 783"> <tr> <td>Modify:</td> <td colspan="2">SQ [band], [lev]</td> </tr> </table>			Status:	SQ [band]		Modify:	SQ [band], [lev]							
Status:	SQ [band]													
Modify:	SQ [band], [lev]													
<p><i>Return:</i></p> <table border="1" data-bbox="240 926 1382 968"> <tr> <td>SQ [band], [lev]</td> <td></td> </tr> </table>			SQ [band], [lev]											
SQ [band], [lev]														
<p><i>Where:</i></p> <table border="1" data-bbox="240 1115 1382 1157"> <tr> <td>[band]</td> <td>see Band Switch Table</td> </tr> </table> <table border="1" data-bbox="240 1157 1382 1199"> <tr> <td>[lev]</td> <td>is a value from 00-05.</td> </tr> </table>			[band]	see Band Switch Table	[lev]	is a value from 00-05.								
[band]	see Band Switch Table													
[lev]	is a value from 00-05.													
<p><i>Notes:</i></p> <p>00 is open squelch.</p>														
<p><i>Example:</i></p> <table border="1" data-bbox="240 1486 1382 1566"> <tr> <td>Sent:</td> <td>SQ 0</td> <td>Request that squelch value for A band.</td> </tr> <tr> <td>Return:</td> <td>SQ 0,05</td> <td>Squelch value for A band is 05.</td> </tr> </table> <table border="1" data-bbox="240 1602 1382 1682"> <tr> <td>Sent:</td> <td>SQ 1,01</td> <td>Request that B band squelch be 01.</td> </tr> <tr> <td>Return:</td> <td>SQ 1,01</td> <td>Transceiver confirms.</td> </tr> </table>			Sent:	SQ 0	Request that squelch value for A band.	Return:	SQ 0,05	Squelch value for A band is 05.	Sent:	SQ 1,01	Request that B band squelch be 01.	Return:	SQ 1,01	Transceiver confirms.
Sent:	SQ 0	Request that squelch value for A band.												
Return:	SQ 0,05	Squelch value for A band is 05.												
Sent:	SQ 1,01	Request that B band squelch be 01.												
Return:	SQ 1,01	Transceiver confirms.												

SR	System Reset							
<p><i>Description:</i></p> <p>Sets and performs the reset function. <span style="float: right;"><i>Menu Item #</i> 31</span></p>								
<p><i>Function:</i></p> <p>Resets various portions of transceiver.</p>								
<p><i>Send:</i></p> <table border="1" data-bbox="240 663 1382 705"> <tr> <td data-bbox="240 663 428 705">Modify:</td> <td colspan="2" data-bbox="428 663 1382 705">SR [val]</td> </tr> </table>			Modify:	SR [val]				
Modify:	SR [val]							
<p><i>Return:</i></p> <table border="1" data-bbox="240 852 1382 894"> <tr> <td data-bbox="240 852 571 894">No return</td> <td colspan="2" data-bbox="571 852 1382 894"></td> </tr> </table>			No return					
No return								
<p><i>Where:</i></p> <table border="1" data-bbox="240 1035 1382 1077"> <tr> <td data-bbox="240 1035 428 1077">[val]</td> <td colspan="2" data-bbox="428 1035 1382 1077">see System Reset Table</td> </tr> </table>			[val]	see System Reset Table				
[val]	see System Reset Table							
<p><i>Notes:</i></p>								
<p><i>Example:</i></p> <table border="1" data-bbox="240 1371 1382 1455"> <tr> <td data-bbox="240 1371 380 1413">Sent:</td> <td data-bbox="380 1371 743 1413">SR 1</td> <td data-bbox="743 1371 1382 1413">Perform VFO Reset.</td> </tr> <tr> <td data-bbox="240 1413 380 1455">Return:</td> <td colspan="2" data-bbox="380 1413 1382 1455">No return value.</td> </tr> </table>			Sent:	SR 1	Perform VFO Reset.	Return:	No return value.	
Sent:	SR 1	Perform VFO Reset.						
Return:	No return value.							

<b>SV</b>	<b>Battery Saver</b>
-----------	----------------------

*Description:*

Gets or sets the Battery saver time.

*Menu Item #*  
17

*Function:*

Sets the receiver shut-off period for the transceiver. Used to reduce energy consumption, extending battery life.

*Send:*

Status:	SV
---------	----

Modify:	SV [val]
---------	----------

*Return:*

SV [val]	
----------	--

*Where:*

[val]	see Battery Saver Table
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*Notes:*

*Example:*

Sent:	SV	Get Battery Saver time.
Return:	SV 5	Transceiver says Battery Saver time is 1.0 sec.

Sent:	SV 7	Request that Battery Saver time be 3.0 sec.
Return:	SV 7	Transceiver confirms.

TH	1750 Hold	
<i>Description:</i>		
Set or gets the 1750 Hz Tone function.		<i>Menu Item #</i> 24
<i>Function:</i>		
Used to hold the transmitted 1750 Hz tone (TH-F7E only).		
<i>Send:</i>		
Status:	TH	
Modify:	TH [val]	
<i>Return:</i>		
TH [val]		
<i>Where:</i>		
[val]	see Logic Table	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	TH	Request status of 1750 Hz Hold function.
Return:	TH 0	Transceiver says 1750 Hz Hold is off.
Sent:	TH 1	Request that 1750 Hz Hold be on.
Return:	TH 1	Transceiver confirms.

TXS		Transmit Inhibit	
<i>Description:</i>			
Turns on or off or gets state of the Transmit Inhibit function.		<i>Menu Item #</i> 08	
<i>Function:</i>			
Prevents accidental or unauthorized transmission.			
<i>Send:</i>			
Status:	TXS		
Modify:	TXS [val]		
<i>Return:</i>			
TXS [val]			
<i>Where:</i>			
[val]	see Logic Table		
<i>Notes:</i>			
<i>Example:</i>			
Sent:	TXS	Get state of Transmitter Inhibit.	
Return:	TXS 0	Transmitter Inhibit is off.	
Sent:	TXS 1	Request that Transmitter Inhibit be on.	
Return:	TXS 1	Transceiver confirms new value.	

TXH	DTMF Hold	
<i>Description:</i>		
Turns on or off or gets state of the DTMF Hold function.		<i>Menu Item #</i> 12
<i>Function:</i>		
Causes the transceiver to remain in transmit mode for two		
<i>Send:</i>		
Status:	THX	
Modify:	THX [val]	
<i>Return:</i>		
THX [val]		
<i>Where:</i>		
[val]	see Logic Table	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	TXH	Request status of DTMF Hold.
Return:	TXH 0	Transceiver says DTMF Hold is off.
Sent:	TXH 1	Request that DTMF Hold be on.
Return:	TXH 1	Transceiver confirms.

TSP		DTMF Speed	
<i>Description:</i>			
Sets or gets DTMF Speed function.		<i>Menu Item # 11</i>	
<i>Function:</i>			
Adjust DTMF number transmission speed.			
<i>Send:</i>			
Status:	TSP		
Modify:	TSP [val]		
<i>Return:</i>			
TSP [val]			
<i>Where:</i>			
[val]	see DTMF Speed Table		
<i>Notes:</i>			
<i>Example:</i>			
Sent:	TSP	Get current DTMF Speed.	
Return:	TSP 0	DTMF Speed is slow.	
Sent:	TSP 1	Request that DTMF Speed be fast.	
Return:	TSP 1	Transceiver confirms new speed.	

TT	Transmit Tone							
<p><i>Description:</i></p> <p>Transmit a 1750Hz tone. <span style="float: right;"><i>Menu Item #</i> n/a</span></p>								
<p><i>Function:</i></p> <p>Will transmit a 1750 Hz tone until a RX command is received.</p>								
<p><i>Send:</i></p> <table border="1" data-bbox="240 663 1383 705"> <tr> <td data-bbox="240 663 428 705">Modify:</td> <td data-bbox="428 663 1383 705">TT</td> </tr> </table>			Modify:	TT				
Modify:	TT							
<p><i>Return:</i></p> <table border="1" data-bbox="240 852 1383 894"> <tr> <td data-bbox="240 852 571 894">TT</td> <td data-bbox="571 852 1383 894"></td> </tr> </table>			TT					
TT								
<p><i>Where:</i></p> <table border="1" data-bbox="240 1041 1383 1083"> <tr> <td data-bbox="240 1041 428 1083">n/a</td> <td data-bbox="428 1041 1383 1083"></td> </tr> </table>			n/a					
n/a								
<p><i>Notes:</i></p> <p>May be stopped by RX command.</p>								
<p><i>Example:</i></p> <table border="1" data-bbox="240 1377 1383 1451"> <tr> <td data-bbox="240 1377 380 1409">Sent:</td> <td data-bbox="380 1377 740 1409">TT</td> <td data-bbox="740 1377 1383 1409">Have transceiver send a 1750 Hz tone.</td> </tr> <tr> <td data-bbox="240 1409 380 1440">Return:</td> <td data-bbox="380 1409 740 1440">TT</td> <td data-bbox="740 1409 1383 1440">Transceiver acknowledges,</td> </tr> </table>			Sent:	TT	Have transceiver send a 1750 Hz tone.	Return:	TT	Transceiver acknowledges,
Sent:	TT	Have transceiver send a 1750 Hz tone.						
Return:	TT	Transceiver acknowledges,						



TYD	Radio Type							
<p><i>Description:</i></p> <p>Displays the radio type. <span style="float: right;"><i>Menu Item #</i> <i>n/a</i></span></p>								
<p><i>Function:</i></p> <p>Unknown</p>								
<p><i>Send:</i></p> <table border="1" data-bbox="240 663 1382 705"> <tr> <td data-bbox="240 663 428 705">Status:</td> <td data-bbox="428 663 1382 705">TYD</td> </tr> </table>			Status:	TYD				
Status:	TYD							
<p><i>Return:</i></p> <table border="1" data-bbox="240 852 1382 894"> <tr> <td data-bbox="240 852 571 894">TYD [val1], [val2]</td> <td data-bbox="571 852 1382 894"></td> </tr> </table>			TYD [val1], [val2]					
TYD [val1], [val2]								
<p><i>Where:</i></p> <table border="1" data-bbox="240 1041 1382 1115"> <tr> <td data-bbox="240 1041 428 1083">[val1]</td> <td data-bbox="428 1041 1382 1083">KK is returned for TH-F6. The meaning is unknown for this value.</td> </tr> <tr> <td data-bbox="240 1083 428 1115">[val2]</td> <td data-bbox="428 1083 1382 1115">0F is returned for TH-F6. The meaning is unknown for this value.</td> </tr> </table>			[val1]	KK is returned for TH-F6. The meaning is unknown for this value.	[val2]	0F is returned for TH-F6. The meaning is unknown for this value.		
[val1]	KK is returned for TH-F6. The meaning is unknown for this value.							
[val2]	0F is returned for TH-F6. The meaning is unknown for this value.							
<p><i>Notes:</i></p>								
<p><i>Example:</i></p> <table border="1" data-bbox="240 1451 1382 1524"> <tr> <td data-bbox="240 1451 380 1482">Sent:</td> <td data-bbox="380 1451 740 1482">TYD</td> <td data-bbox="740 1451 1382 1482">Request radio type.</td> </tr> <tr> <td data-bbox="240 1482 380 1524">Return:</td> <td data-bbox="380 1482 740 1524">TYD KK,0F</td> <td data-bbox="740 1482 1382 1524">Transceiver responds.</td> </tr> </table>			Sent:	TYD	Request radio type.	Return:	TYD KK,0F	Transceiver responds.
Sent:	TYD	Request radio type.						
Return:	TYD KK,0F	Transceiver responds.						

TX	Transmit							
<p><i>Description:</i></p> <p>Switches transceiver to transmit mode. <span style="float: right;"><i>Menu Item #</i> n/a</span></p>								
<p><i>Function:</i></p> <p>Transceiver will transmit until an RX command is received.</p>								
<p><i>Send:</i></p> <table border="1" data-bbox="240 663 1383 705"> <tr> <td data-bbox="240 663 428 705">Modify:</td> <td colspan="2" data-bbox="428 663 1383 705">TX</td> </tr> </table>			Modify:	TX				
Modify:	TX							
<p><i>Return:</i></p> <table border="1" data-bbox="240 852 1383 894"> <tr> <td data-bbox="240 852 571 894">TX</td> <td colspan="2" data-bbox="571 852 1383 894"></td> </tr> </table>			TX					
TX								
<p><i>Where:</i></p> <table border="1" data-bbox="240 1035 1383 1077"> <tr> <td data-bbox="240 1035 428 1077">n/a</td> <td colspan="2" data-bbox="428 1035 1383 1077"></td> </tr> </table>			n/a					
n/a								
<p><i>Notes:</i></p> <p>Can be stopped by RX command.</p>								
<p><i>Example:</i></p> <table border="1" data-bbox="240 1371 1383 1455"> <tr> <td data-bbox="240 1371 380 1413">Sent:</td> <td data-bbox="380 1371 743 1413">TX</td> <td data-bbox="743 1371 1383 1413">Have transceiver enter the transmit mode.</td> </tr> <tr> <td data-bbox="240 1413 380 1455">Return:</td> <td data-bbox="380 1413 743 1455">TX</td> <td data-bbox="743 1413 1383 1455">Transceiver confirms.</td> </tr> </table>			Sent:	TX	Have transceiver enter the transmit mode.	Return:	TX	Transceiver confirms.
Sent:	TX	Have transceiver enter the transmit mode.						
Return:	TX	Transceiver confirms.						

UP	Up						
<p><i>Description:</i></p> <p>Moves up one memory channel in MR mode or up one frequency step in VFO mode. <span style="float: right;"><i>Menu Item #</i> n/a</span></p>							
<p><i>Function:</i></p> <p>Moves up one memory channel in MR mode or up one frequency step in VFO mode.</p>							
<p><i>Send:</i></p> <table border="1" data-bbox="240 663 1382 705"> <tr> <td data-bbox="240 663 428 705">Modify:</td> <td data-bbox="428 663 1382 705">UP</td> </tr> </table>		Modify:	UP				
Modify:	UP						
<p><i>Return:</i></p> <table border="1" data-bbox="240 852 1382 894"> <tr> <td data-bbox="240 852 571 894">UP</td> <td data-bbox="571 852 1382 894"></td> </tr> </table>		UP					
UP							
<p><i>Where:</i></p> <table border="1" data-bbox="240 1035 1382 1077"> <tr> <td data-bbox="240 1035 428 1077">n/a</td> <td data-bbox="428 1035 1382 1077"></td> </tr> </table>		n/a					
n/a							
<p><i>Notes:</i></p> <p>Same as rotating Tuning Control one click clockwise. See DW.</p>							
<p><i>Example:</i></p> <table border="1" data-bbox="240 1371 1382 1451"> <tr> <td data-bbox="240 1371 380 1413">Sent:</td> <td data-bbox="380 1371 743 1413">UP</td> <td data-bbox="743 1371 1382 1413">Have transceiver move up.</td> </tr> <tr> <td data-bbox="240 1413 380 1451">Return:</td> <td data-bbox="380 1413 743 1451">UP</td> <td data-bbox="743 1413 1382 1451">Transceiver confirms.</td> </tr> </table>		Sent:	UP	Have transceiver move up.	Return:	UP	Transceiver confirms.
Sent:	UP	Have transceiver move up.					
Return:	UP	Transceiver confirms.					

VMC	Mode of the VFO band	
<i>Description:</i>		
Get/Set the mode of the VFO band.		<i>Menu Item #</i> n/a
<i>Function:</i>		
Will switch the A or B band from VFO, MR, or CALL mode.		
<i>Send:</i>		
Status:	VMC [band] to get the mode of band.	
Modify:	VMC [band], [mode] to set the mode of band.	
<i>Return:</i>		
VMC [band], [mode]		
<i>Where:</i>		
[band]	see Band Switch Table	
[mode]	see VFO Mode Table	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	VMC 0	Request mode of A band.
Return:	VMC 0,0	Transceiver says A band is in VFO mode.
Sent:	VMC 1,1	Request that B band be in MR mode.
Return:	VMC 1,1	Transceiver confirms.

VOX	VOX Transmit	
<i>Description:</i>		
Sets or gets VOX on transmit.		<i>Menu Item #</i> n/a
<i>Function:</i>		
VOX Transmit automatically switches to transmit when the VOX circuitry senses sound in the microphone.		
<i>Send:</i>		
Status:	VOX	
Modify:	VOX [val]	
<i>Return:</i>		
VOX [val]		
<i>Where:</i>		
[val]	see Logic Table	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	VOX	Request status of VOX transmit.
Return:	VOX 0	Transceiver says VOX transmit mode is off.
Sent:	VOX 1	Request that VOX transmit mode be on.
Return:	VOX 1	Transceiver confirms.

VR	VFO Read	
<i>Description:</i>		
Read the VFO Setting for specified band.		<i>Menu Item #</i> n/a
<i>Function:</i>		
Reads all data associated with a VFO.		
<i>Send:</i>		
Status:	VR [band]	
<i>Get:</i>		
VR [band],[freq]		
<i>Where:</i>		
[band]	see Band Table	
[freq]	See Freq Table. Lockout value excluded.	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	VR 0	Request data for 2 m VFO band.
Return:	VR 0, 00142060000,0,0,0,0,1,0, 25,09,001,000700000,0	A frequency of 142.06 MHz. CTCSS is on at a frequency of 88.5 Hz. An offset of 700 KHz.

VW		VFO Write
<i>Description:</i>		
Sets the VFO values of the specified band.		<i>Menu Item # n/a</i>
<i>Function:</i>		
Saves all data associated with a VFO.		
<i>Send:</i>		
Modify:	VW [band],[freq]	
<i>Return:</i>		
VW		
<i>Where:</i>		
[band]	See Ham Band Table.	
[freq]	See Freq Table. Lockout value excluded.	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	VW 0, 00142060000,0,0,0,0,1,0, 25,09,001,000700000,0	Request that VFO be set to a frequency of 142.06 MHz. CTCSS be on at a frequency of 88.5 Hz. An offset of 700 KHz.
Return:	VW	Transceiver confirms.

VXB	VOX On Busy	
<i>Description:</i>		
Gets or sets the VOX On Busy function.		<i>Menu Item #</i> 20
<i>Function:</i>		
Configure transceiver to force VOX transmission even if the transceiver is receiving a signal on A or B band.		
<i>Send:</i>		
Status:	VXB	
Modify:	VXB [val]	
<i>Return:</i>		
VXB [val]		
<i>Where:</i>		
[val]	see Logic Table	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	VXB	Requesting status of VOX on Busy.
Return:	VXB 0	Transceiver says VOX on Busy is off.
Sent:	VXB 1	Request that VOX on Busy be on.
Return:	VXB 1	Transceiver confirms that VOX on Busy is on.



VXD	VOX Delay	
<i>Description:</i>		
Gets or sets the VOX Delay time.		<i>Menu Item #</i> 22
<i>Function:</i>		
Sets or gets the delay time between transmit and receive after sound input stops.		
<i>Send:</i>		
Status:	VXD	
Modify:	VXD [val]	
<i>Return:</i>		
VXD [val]		
<i>Where:</i>		
[val]	see VOX Delay Table	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	VXD	Request VOX delay time.
Return:	VXD 1	Transceiver says VOX delay time is 500 ms.
Sent:	VXD 0	Request that VOX delay time is 250 ms.
Return:	VXD 0	Conformation that VOX delay time is 250 ms.

VXG	VOX Gain	
<i>Description:</i>		
Gets or sets the VOX Gain.	<i>Menu Item # 21</i>	
<i>Function:</i>		
Controls the VOX circuit to detect the presence or absence of sound.		
<i>Send:</i>		
Status:	VXG	
Modify:	VXG [val]	
<i>Return:</i>		
VXG [val]		
<i>Where:</i>		
[val]	is a number from 0 to 9. The default value is 4.	
<i>Notes:</i>		
<i>Example:</i>		
Sent:	VXG	Requesting the VOX level.
Return:	VXG 4	Transceiver says the VOX level is 4.
Sent:	VXG 9	Request the VOX level to be 9.
Return:	VXG 9	Confirmation of VOX level of 9.

## Menu Item Summary

Command	Description	Menu Item
SCR	Scan Resume	01
MGL	Memory Group Link	02
MRM	Memory Recall Method	03
PV	Program VFO Limits	04
ARO	Auto Repeater Offset	05
unknown	Offset	06
ELK	Tune Enable	07
THS	Transmit Inhibit	08
unavailable	SP/MIC Jack	09
DM/ DMN	Get/Set DTMF Memory Location	10
TSP	DTMF Speed	11
TXH	DTMF Hold	12
PT	DTMF Pause	13
DLK	DTMF Lock	14
MES	Get/Set Power on Message	15
CNT	Contrast	16
SV	Battery Saver	17
APO	Automatic Power Off (APO)	18
BEP	Beep Function	19
VXB	VOX on Busy	20
VXG	VOX Gain	21
VXD	VOX Delay	22
CKEY	Call Key	23
TH	1750 Hold	24
NSFT	Beat Shift	25
ANT	Bar Antenna	26
LAN	Get/Set Default Language	27
DATP	Packet Speed	28
NAR	FM Narrow	29
BAT	Battery Type	30
SR	Reset	31

Function	Keystroke	Command	Function
LOW	LOW	PC	Select Transmitter Power
BAND	BAND	BC	Select Band
A/B	A/B		Select A/B Band
F	F		Shift
INFO	INFO		Select Information Channels
SQL	SQL	SQ	Adjusting Squelch
BAL	BAL	BAL	Set Volume Balance Between Bands
VFO	VFO		Enter VFO Mode
TONE	TONE		Activate Tone Function
REV	REV		Reverse Rec/Xmit Frequencies
MN-f	MN-f	MNF	Switch Between Memory Name and Frequency
MR	MR		Memory Recall
MHz	MHz		Enter MHz Tuning Mode
FINE	FINE		Enter Fine Tuning Mode
ENT	ENT		Enter Number Entry mode
CALL	CALL		Select Call Channel
BATT	F,LOW		Battery Remaining
MODE	F,BAND		Select Receiving Mode
DUAL	F,A/B	DL	Select Single/Dual Band Operation
(key)	F,F		Enter Locked Mode
VISUAL	F,INFO		Enable Visual Scan
VOX	F,SQL	VOX	Enable VOX
PRI	F,BAL		Priority Scan
M-V	F,VFO		Transfer Memory to VFO
T.SEL	F,TONE		Select Tone Frequency
SHIFT	F,REV		Set Offset Direction
MN.IN	F,MN-f		Enter Memory Name Input Mode
M.IN	F,MR		Store in Memory
L.OUT	F,MHz		Lockout
STEP	F,FINE		Select Fine Tuning Frequency Step
(bell)	F,ENT	BEL	Tone Alert
C.IN	F,CALL		Store Call Channel
	LOW (1s)		
	BAND (1s)		
	A/B (1s)		
Lock Function	F (1s)		
Info Channel Scan Start	INFO (1s)		
	SQL (1s)		
	BAL (1s)		
Band Scan/Program Scan Start	VFO (1s)		
Tone Freq ID Scan	TONE (1s)		

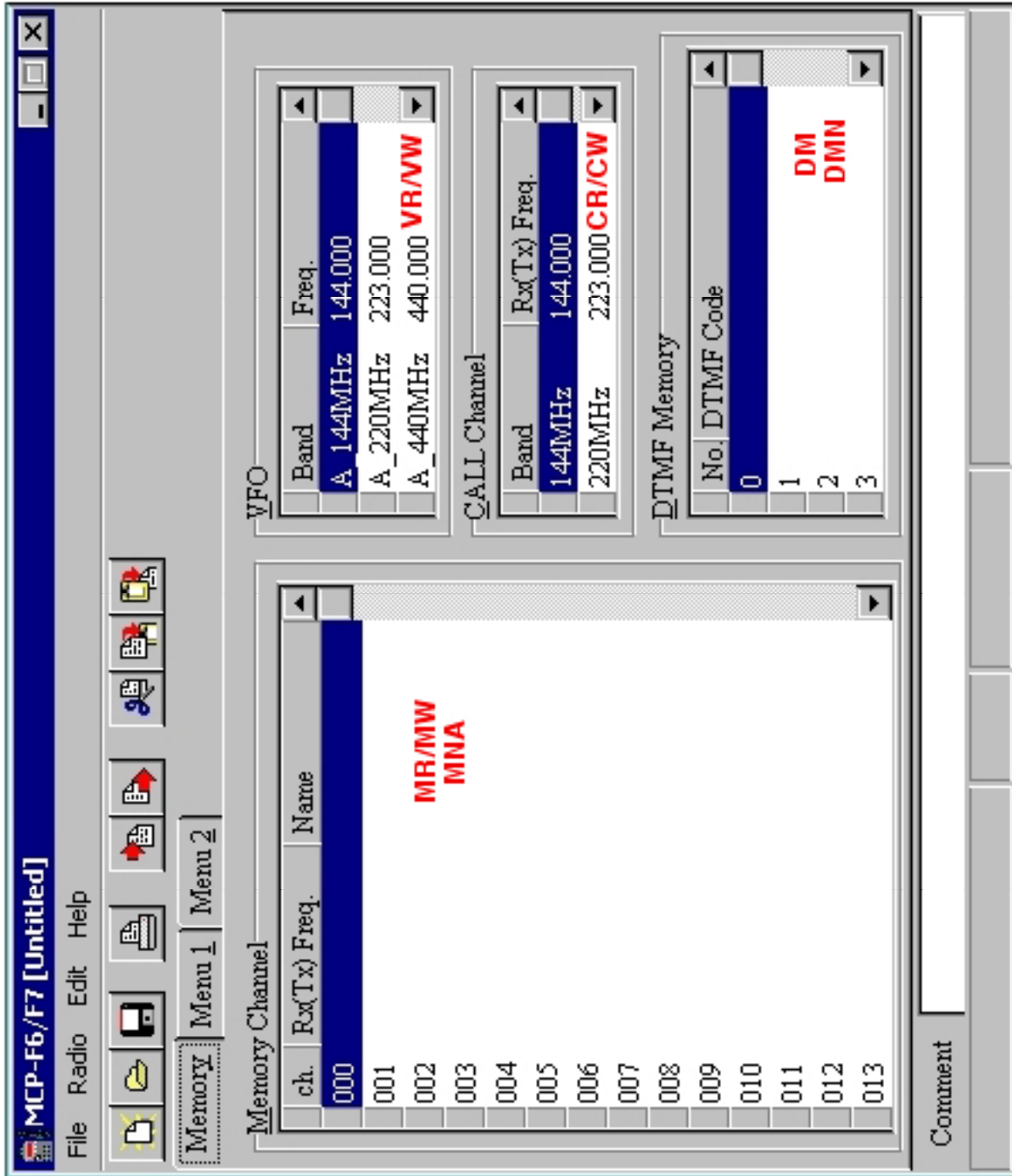
ASC	REV (1s)		
	MN-f (1s)		
Memory Scan Start	MR (1s)		
MHz Scan/Group Scan Start	MHz (1s)		
	FINE (1s)		
	ENT (1s)		
	CALL (1s)		
	F,LOW (1s)		
	F,BAND (1s)		
	F,A/B (1s)		
	F, F (1s)		
	F,INFO (1s)		
	F,SQL (1s)		
	F,BAL (1s)		
	F,VFO (1s)		
CTCSS/DCS ID Scan	F,TONE (1s)		
	F,REV (1s)		
	F,MN-f (1s)		
	F,MR (1s)		
	F,MHz (1s)		
	F,FINE (1s)		
	F,ENT (1s)		
Call Scan Start	CALL (1s)		
1			
2			
3			
A			
4			
5			
6			
B			
7			
8			
9			
C			
*			
0			
#			
D			
VOL			
TUNING			
PTT			

LAMP			
MONI			
Scroll Key			
Power			
	[PTT]+[MR]		
	[PTT]+[▶]		
	[PTT]+[MNU]		
	[MR]+[PWR]		
	[PTT]+[CALL]		
	[A/B]+[PWR]		
	[PTT]+{VFO}+[PWR]		
	[PTT]+[MR]+[PWR]		
	[F]+[PWR]		
	[MHz]+[PWR]		

# Splash Screen

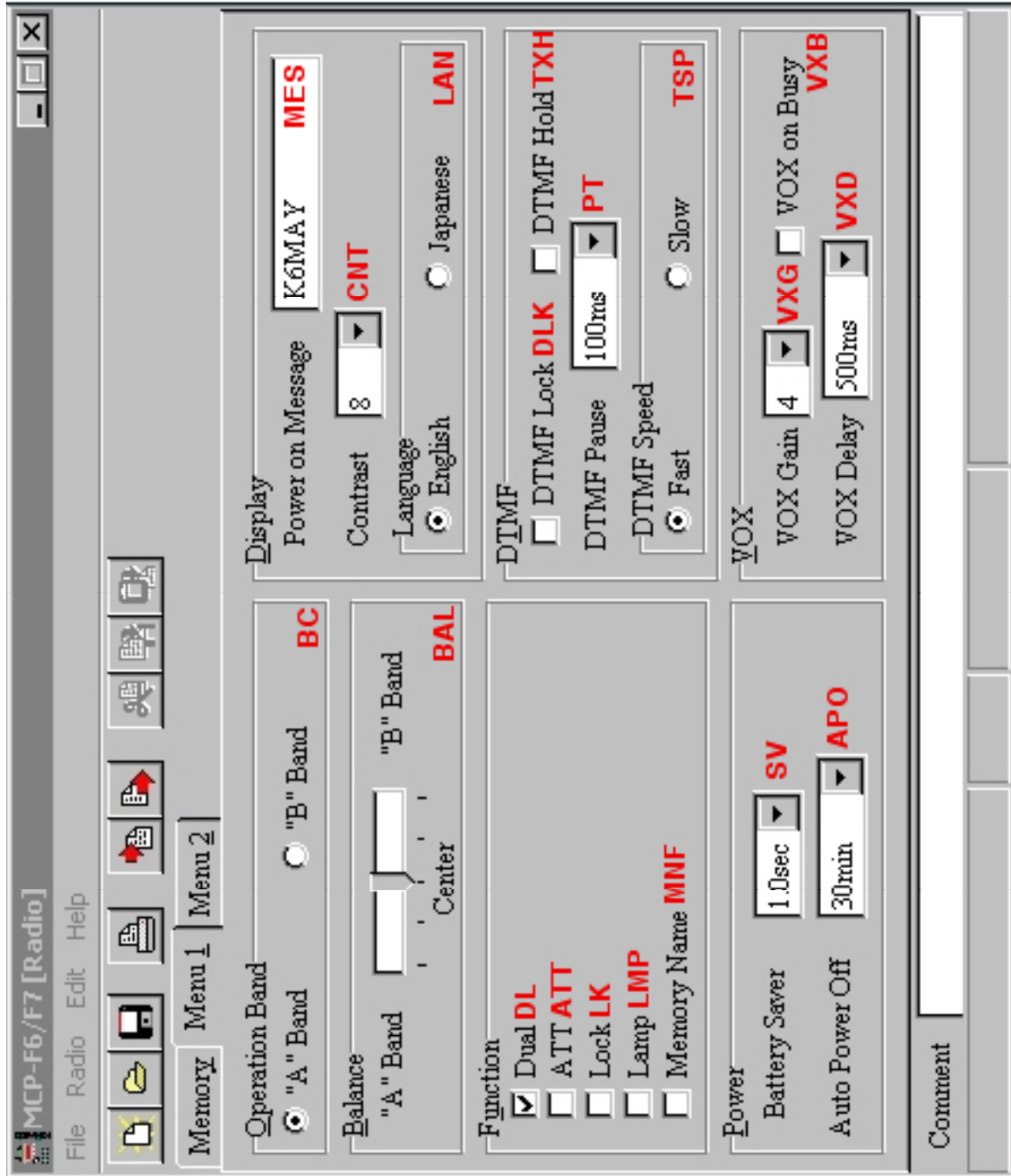


# Memory Screen

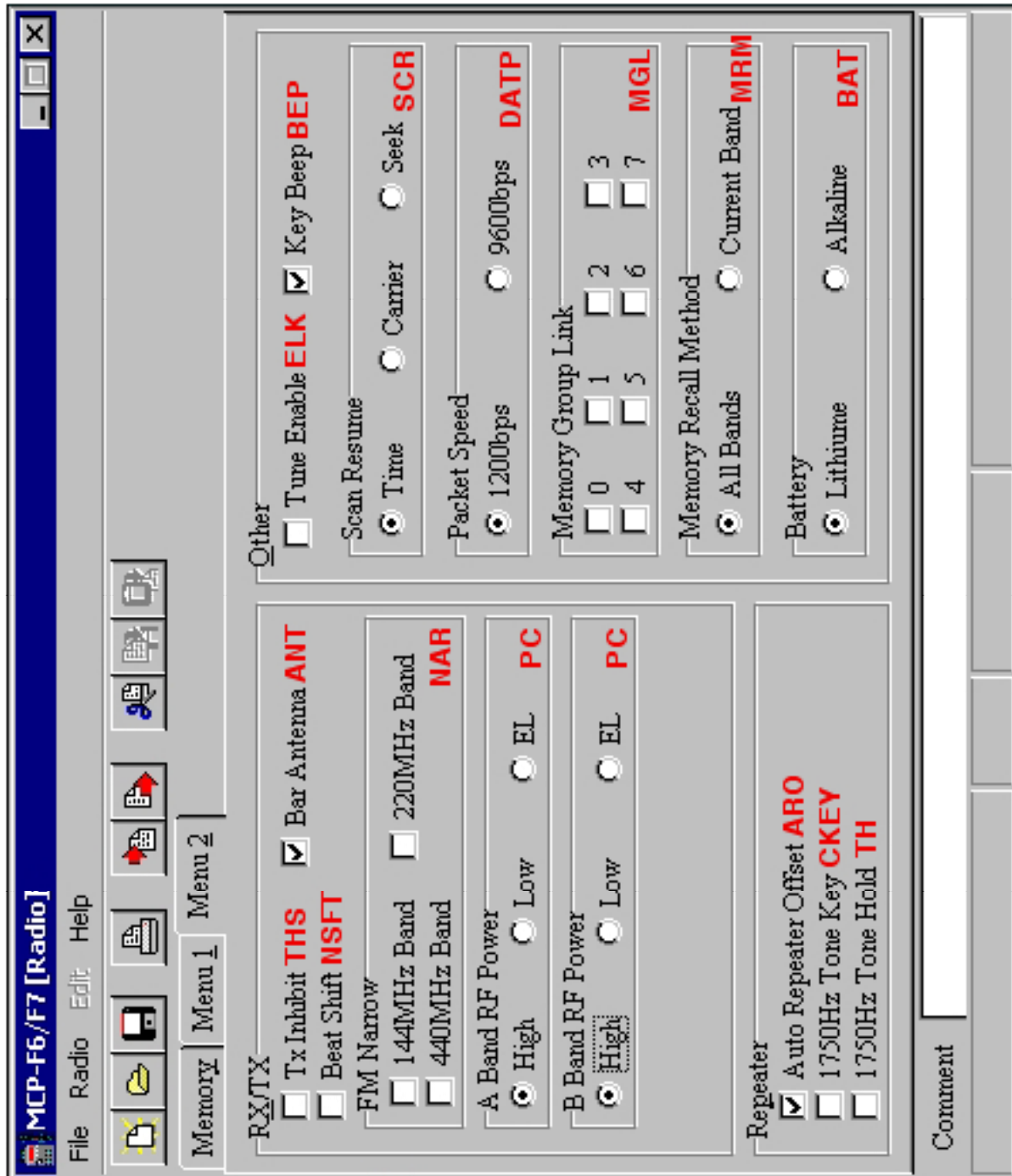




# Menu1 Screen



# Menu2 Screen



# Memory Channel Entry Screen

The screenshot shows a window titled "Memory" with a close button in the top right corner. The window contains the following fields and controls:

- Memory Channel Number:** A numeric input field containing the value "0".
- Frequency Section:**
  - Rx Frequency:** A numeric input field containing "144.000" followed by "MHz".
  - Step:** A dropdown menu currently set to "5kHz".
  - Mode:** A dropdown menu currently set to "FM".
  - Offset:** A numeric input field containing "0.60" followed by "MHz".
- Tone/CTCSS/DCS Section:**
  - Three checkboxes: "Tone" (unchecked), "CTCSS" (unchecked), and "DCS" (unchecked).
  - Tone Frequency:** A dropdown menu set to "88.5Hz".
  - CTCSS Frequency:** A dropdown menu set to "88.5Hz".
  - DCS Code:** A dropdown menu set to "023".
- Option Section:**
  - Four radio buttons: "Split Channel" (unchecked), "Simplex" (checked), "Plus Shift" (unchecked), and "Minus Shift" (unchecked).
  - A checkbox labeled "Reverse" (unchecked).
  - Memory Name:** An empty text input field.
  - A checkbox labeled "Lock Out" (unchecked).

At the bottom right of the window are two buttons: "OK" and "Close".

# VFO Entry Screen

The image shows a software dialog box titled "VfoForm" with a close button in the top right corner. The dialog is organized into several sections:

- Band:** A dropdown menu set to "A\_144MHz".
- Frequency Section:**
  - Rx Frequency:** A text input field containing "144.000" followed by "MHz".
  - Step:** A dropdown menu set to "5kHz".
  - Mode:** A dropdown menu set to "FM".
  - Offset:** A text input field containing "0.60" followed by "MHz".
- Tone/CTCSS/DCS Section:**
  - Three checkboxes: "Tone" (unchecked), "CTCSS" (unchecked), and "DCS" (unchecked).
  - Tone Frequency:** A dropdown menu set to "88.5Hz".
  - CTCSS Frequency:** A dropdown menu set to "88.5Hz".
  - DCS Code:** A dropdown menu set to "023".
- Shift Section:**
  - Radio buttons for "Simplex" (selected), "Plus Shift", and "Minus Shift".
  - An unchecked checkbox for "Reverse".
- Program VFO Section:**
  - Two text input fields containing "137" and "173" separated by a hyphen, followed by "MHz".

At the bottom of the dialog are two buttons: "OK" and "Close".

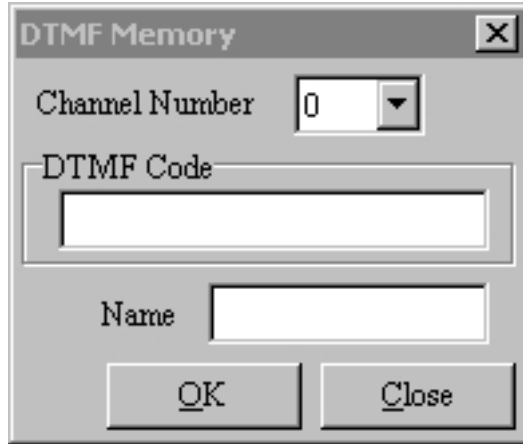
# Call Channel Entry Screen

The screenshot shows a dialog box titled "CALL Channel" with a close button (X) in the top right corner. The dialog is divided into several sections:

- Band:** A dropdown menu set to "144MHz".
- Frequency:** A section containing:
  - Rx Frequency:** A text input field containing "144.000" followed by "MHz".
  - Step:** A dropdown menu set to "5kHz".
  - Mode:** A dropdown menu set to "FM".
  - Offset:** A text input field containing "0.60" followed by "MHz".
- Tone/CTCSS/DCS:** A section containing:
  - Three checkboxes: "Tone" (unchecked), "CTCSS" (unchecked), and "DCS" (unchecked).
  - Tone Frequency:** A dropdown menu set to "88.5Hz".
  - CTCSS Frequency:** A dropdown menu set to "88.5Hz".
  - DCS Code:** A dropdown menu set to "023".
- Channel Mode:** A group of radio buttons:
  - Split Channel
  - Simplex
  - Plus Shift
  - Minus Shift
- Reverse:** A checkbox (unchecked) labeled "Reverse".

At the bottom right of the dialog are two buttons: "OK" and "Close".

# DTMF Entry Screen



The image shows a dialog box titled "DTMF Memory" with a close button (X) in the top right corner. It contains the following elements:

- A "Channel Number" label followed by a dropdown menu showing the value "0".
- A "DTMF Code" label followed by a text input field.
- A "Name" label followed by a text input field.
- Two buttons at the bottom: "OK" and "Close".

# Hardware Interface for Macintosh



# Format of the F6/F7 Kenwood File

	Description
<u>COMMENT</u>	The comment that appears at the bottom of main screen. The comments line is stored in the configuration file. The comment has nothing to do with the radio.
MEMORY DATA	
<u>CALL DATA</u>	
<u>VFO DATA</u>	
<u>DTMF DATA</u>	
<u>RADIO MENU</u>	

KENWOOD Memory Control Program for TH-FX

```

COMMENT
<character string>
MEMORY DATA
<MR/MW 0 [mem]> <MR/MR 0 [freq]> <MR/MW 1 [freq]> <MNA [name]>
CALL DATA
<CR/CW 0 [band]> <CR/CW 0 [freq]> <CR/CW 1 [freq]>
VFO DATA
<VR/VW [band]> <VR/VW [freq]>
DTMF DATA
<DM [cc]> <DM [num]> <DMN [name]>
RADIO MENU
<PV [band]>,<PV [F1]>,<PV [f2]>
<UNKNOWN>
<BC [val]>
<BAL [val]>
<DL [val]>
<ATT [val]>
<LK [val]>
<LMP [val]>
<MNF [val]>
<PC A Band [pwr]>
<PC B Band [pwr]>
<1.2G A Band Power>
<1.2G B Band Power>
<SCR [val]>
<MGL [val]>
<MRM [val]>
<ARO [val]>
<ELK [val]>
<TXS [val]>

```



<TSP [val]>  
<PT [val]>  
<DLK [val]>  
<TXH [val]>  
<MES [message]>  
<CNT [val]>  
<SV [val]>  
<APO [val]>  
<BEP [val]>  
<VXB [val]>  
<VXG [val]>  
<VXD [val]>  
<CKEY [val]>  
<TH [val]>  
<NSFT [val]>  
<ANT [val]>  
<LAN [lang]>  
<DATP [val]>  
<NAR 0 [val]>  
<NAR 1 [val]>  
<NAR 2 [val]>  
<UNKNOWN>  
<UNKNOWN>  
<BAT [val]>

## Commands to set TH-F6 to factory reset state

```
ANT 1
APO 1
ARO 1
ASC 0,0
ASC 1,0
ATT 0
BAL 2
BAT 0
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MW 0,PR2  
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NAR 2,0  
NSFT 0  
PC 0,0  
PC 1,0  
PT 0  
PV 0,00137,00173,173  
PV 1,00216,00259,259  
PV 2,00410,00469,469  
RBN 0  
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SQ 1,02  
SR 0  
SV 5  
TH 0  
TSP 0  
TXH 0  
TXS 0  
TYD KK,0F  
VMC 0,0  
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VW 2,00440000000,8,0,0,0,0,0,0,08,08,000,005000000,0  
VW 4,00000540000,4,0,0,0,0,0,0,08,08,000,000000000,2  
VW 5,00003500000,0,0,0,0,0,0,0,08,08,000,000000000,3  
VW 6,00051000000,4,0,0,0,0,0,0,08,08,000,000000000,0  
VW 7,00087900000,B,0,0,0,0,0,0,08,08,000,000000000,1  
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VW B,00223000000,7,0,0,0,0,0,0,08,08,000,001600000,0  
VW C,00440000000,8,0,0,0,0,0,0,08,08,000,005000000,0  
VW D,00475750000,A,0,0,0,0,0,0,08,08,000,000000000,1  
VW E,01240000000,8,0,0,0,0,0,0,08,08,000,000000000,0  
VXB 0  
VXD 1  
VXG 4

## Notes:

On the "Menu 2" tab, in the "Repeater" group box the second item "1750Hz Tone Key" corresponds to menu item 23 (Call Key).

On the "Memory" tab, if you double-click on an "A" band in the "VFO" section you will get a popup form with a number of fields. The "Program VFO" section (only on the three A bands) corresponds to Menu item 4. The "Offset" (on all bands) corresponds to Menu item 6. Therefore, these two menu items (4 & 6) actually store multiple fields. Two other menu items that also store multiple fields are item 10 (DTMF store) and item 29 (FM narrow).

These items can be configured on the radio but are not present in this program:

- 1) Menu 9 "SP/Mic"

**Notes:**

