Kenwood TH-F6A/TH-F7E Protocol Specification

Version 1.9

By John May, K6MAY

Kenwood TH-F6A/TH-F7E
Protocol Specification
Version 1.9

By John May, K6MAY

Warranty, Disclaimer, Assumption of Risk, and Indemnification

ALL DATA AND INFORMATION PROVIDED IN THIS DOCUMENT IS FOR INFORMATIONAL PURPOSES ONLY AND IS AN EXPRESSION OF FREE SPEECH.

Definition: The term "person" as used in this section includes not only a natural person but also any entity, (including natural persons). The term “author” is the person or persons who wrote this document. The term “reader” is the user of this document.

NO WARRANTIES: TO THE EXTENT PERMITTED BY APPLICABLE LAW, NEITHER THE AUTHOR OF THIS DOCUMENT, NOR ANY PERSON, EITHER EXPRESSLY OR IMPLICITLY, WARRANTS ANY ASPECT OF THIS DOCUMENT, INCLUDING ANY OUTPUT OR RESULTS OF THE USE OF THIS DOCUMENT. UNLESS AGREED TO IN WRITING. THIS DOCUMENT IS BEING PROVIDED "AS IS", WITHOUT ANY WARRANTY OF ANY TYPE OR NATURE, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTY THAT THIS DOCUMENT IS FREE FROM DEFECTS.

ASSUMPTION OF RISK: THE RISK OF ANY AND ALL LOSS, DAMAGE, OR UNSATISFACTORY PERFORMANCE DOCUMENT RESTS WITH THE READER. TO THE EXTENT PERMITTED BY LAW, NEITHER THE AUTHOR OF THIS DOCUMENT, NOR ANY PERSON EITHER EXPRESSLY OR IMPLICITLY, MAKES ANY REPRESENTATION OR WARRANTY REGARDING THE APPROPRIATENESS OF THE USE, OUTPUT, OR RESULTS OF THE USE OF THIS DOCUMENT IN TERMS OF ITS CORRECTNESS, ACCURACY, RELIABILITY, BEING CURRENT OR OTHERWISE. NOR DO THEY HAVE ANY OBLIGATION TO CORRECT ERRORS, MAKE CHANGES, SUPPORT THIS DOCUMENT, DISTRIBUTE UPDATES, OR PROVIDE NOTIFICATION OF ANY ERROR OR DEFECT, KNOWN OR UNKNOWN. IF THE READER RELIES UPON THIS DOCUMENT, THE READER DOES SO AT THEIR OWN RISK, AND THE READER ASSUMES THE RESPONSIBILITY FOR THE RESULTS. SHOULD THIS DOCUMENT PROVE DEFECTIVE OR INCORRECT, THE READER ASSUMES THE COST OF ALL LOSSES, INCLUDING, BUT NOT LIMITED TO, ANY NECESSARY SERVICING, REPAIR OR CORRECTION OF ANY PROPERTY INVOLVED.

DISCLAIMER: IN NO EVENT, UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING, SHALL THE AUTHOR, OR ANY PERSON, OTHER THAN THE READER, BE LIABLE FOR ANY LOSS, EXPENSE OR DAMAGE, OF ANY TYPE OR NATURE ARISING OUT OF THE USE OF, OR INABILITY TO USE THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, CLAIMS, SUITS OR CAUSES OF ACTION INVOLVING ALLEGED INFRINGEMENT OF COPYRIGHTS, PATENTS, TRADEMARKS, TRADE SECRETS, OR UNFAIR COMPETITION.

“REVERSE ENGINEERING” OR VIOLATING THE COPYRIGHT OF KENWOOD COMMUNICATIONS CORPORATION OR ANY OTHER THIRD PARTY DID NOT OCCUR IN OBTAINING THE INFORMATION IN THIS DOCUMENT. THE INFORMATION OBTAINED FOR THIS DOCUMENT WAS DISCOVERED BY TRYING ALL ONE, TWO, THREE, AND FOUR LETTER ALPHABETIC COMMANDS SENT TO THE TRANSCEIVER THROUGH A TERMINAL PROGRAM AND LOOKING AT AND EVALUATING THE RESPONSE FROM THE TRANSCEIVER OR BY EXAMINING THE TEXT FILE CREATED BY THE KENWOOD SOFTWARE. THE SCREEN SHOTS OF KENWOOD CORPORATION’S SOFTWARE VIOLATES NO COPYRIGHT SINCE THESE SCREEN SHOTS ARE FOUND IN THE PUBLIC DOMAIN. IT IS THE AUTHOR’S OPINION AS TO WHAT COMMANDS ARE USED TO OBTAIN INFORMATION IN THE KENWOOD SOFTWARE.

INDEMNIFICATION: TO THE EXTEND PERMITTED BY LAW THROUGH THIS AGREEMENT, THE READER AGREES TO INDEMNIFY AND HOLD HARMLESS THE AUTHOR OF THIS DOCUMENT, OR ANY PERSON FROM AND AGAINST ALL CLAIMS, LIABILITIES, LOSSES, CAUSES OF ACTION, DAMAGES, JUDGMENTS, AND EXPENSES, INCLUDING THE REASONABLE COST OF ATTORNEYS’ FEES AND COURT COSTS, FOR INJURIES OR DAMAGES TO THE PERSON OR PROPERTY OF THIRD PARTIES, INCLUDING, WITHOUT LIMITATIONS, CONSEQUENTIAL DAMAGES AND ECONOMIC LOSSES, THAT ARISE OUT OF OR IN CONNECTION WITH THE READERS USE, MODIFICATION, OR DISTRIBUTION OF THIS DOCUMENT, ITS DERIVATIVES, OR ANY OTHER ACCOMPANYING DOCUMENTATION.

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 BBEdit. 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 BBEdit. In BBEdit, 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:

Paul, WB8TFV
Bob, KB6YJW
Bud, K9SWC
Dave, N9EWO
Joao, KB2LJJ
Héctor, XE1BEF
Steve, K9DCI
Ben, KD6OIZ
Razvan, YO9HBM
Anthony, WA3HRL
Eric, OZ2AEP
Al, N6AC
George, N0SBU

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

Thank you.

Tables

List of Tables

1. APO Table

[val]	Time
0	Off
1	30 min
2	60 min

2. Balance Table

[val]	A Band	B Band
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

[val]	A/B
0	A
1	B

6. Battery Saver Table

[val]	Time
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

[val]	Type
0	Lithium
1	Alkaline

8. Busy Table

[stat]	State
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	{	|	}
~	\	*SP*	!	“	#	$	%	&	‘
(	)	*	+	,	-	.	/	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	Œ	à	á	â	ã	ä	ä	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

#	Code	#	Code	#	Code	#	Code
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	*	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

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

15. DTMF Pause Table

[val]	Duration
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

[val]	Step Size
0	33 Hz
1	100 Hz
2	500 Hz
3	1000 Hz

19. Frequency Table

Field	Value	Description	Split Use
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	nnnnnnnnnnn – 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

[name]	Step Size
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

1	2	3	4	5	6	7	8
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

[val]	Method
0	All bands
1	Current band

29. Modulation Mode Table

[mode]	Modulation
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

[pwr]	Output
0	H
1	L
2	EL

33. Return Code Table

Return Code	Description
N	Radio recognized command, but it was used incorrectly or the invalid parameters were specified.
O	Overflow of radio's character buffer. If more that 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

[val]	Method
0	Time
1	Carrier
2	Seek

35. Serial Port Parameters Table

Name	Value
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 form 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

[split]	Channel Definition
0	Main or receive channel
1	Transmit channel

38. State Table

[val]	State
0	Disabled
1	Enabled

39. Step Size Table

Number	Step Size
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

Number	Reset Type
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

[mode]	Mode
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

[val]	Time
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

Command	Description	Menu Item
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
Description: Long description of command function.	
Function: Description of what command does to transceiver.	
Send: Format of command sent to transceiver. Parameters for each command are enclosed in [].	
Return: Format of the response from the transceiver.	
Where: A description of the parameters for the command.	
Notes: Any additional information.	
Example: 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

Description:

Enables or disables the bar antenna. *Menu Item # 26*

Function:

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.

Send:

Status:	ANT

Modify:	ANT [val]

Return:

ANT [val]	

Where:

[val]	see State Table

Notes:

Example:

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.

APO	Automatic Power Off

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

Description:

Turns on or off or gets state of the Auto Repeater Offset (ARO) function.

Menu Item # 05

Function:

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.

Send:

Status:	ARO

Modify:	ARO [val]

Return:

ARO [val]	

Where:

[val]	see Logic Table

Notes:

Example:

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

Description:

Get or set Auto Simplex Check for a given band.

Menu Item #
n/a

Function:

Periodically checks the signal strength of received signal to see if it is strong enough to allow contact without a repeater.

Send:

Status:	ASC [band]

Modify:	ASC [band],[val]

Return:

ASC [band],[val]	

Where:

[band]	see Band Switch Table
[val]	see Logic Table

Notes:

Example:

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

Description:

Gets or sets the attenuator.

Menu Item #
n/a

Function:

Use to attenuate nearby or extremely strong signals to prevent erroneously control and overload. The attenuator is approximately 20 DB when ON.

Send:

Status:	ATT

Modify:	ATT [val]

Return:

ATT [val]	

Where:

[val]	see Logic Table

Notes:

Example:

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

Description:

Gets or sets the volume balance between A and B bands. *Menu Item # n/a*

Function:

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.

Send:

Status:	BAL

Modify:	BAL [val]

Return:

BAL [val]	

Where:

[val]	see Balance Table.

Notes:

Default value is 2 (both A and b bands equal).

Example:

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

Description:

Gets or sets the battery type. *Menu Item # 30*

Function:

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).

Send:

Status:	BAT

Modify:	BAT [val]

Return:

BAT [val]	

Where:

[val]	see Battery Type Table

Notes:

Example:

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

Description:

Gets or sets the current band.

Menu Item #
n/a

Function:

Selects the A band or B band for operation.

Send:

Status:	BC

Modify:	BC [band]

Return:

BC [val]	

Where:

[val]	see Band Switch Table

Notes:

Example:

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.

BEP	Beep Function

Description:

Gets or sets the beep function. *Menu Item # 19*

Function:

The beef function provides an audible confirmation of entry, error status, and malfunctions of the transceiver.

Send:

Status:	BEP

Modify:	BEP [val]

Return:

BEP [val]	

Where:

[val]	see Logic Table

Notes:

Example:

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

Description:

Gets or sets the tone alert function.

Menu Item #
n/a

Function:

Provides an audible alarm when signals are received on the monitored frequency.

Send:

Status:	BEL [band]

Modify:	BEL [band],[val]

Return:

BEL [band],[val]	

Where:

[band]	see Band Switch Table.
[val]	see Logic Table.

Notes:

Example:

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

Description:

Displays Busy status of a band.

Menu Item #
n/a

Function:

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.

Send:

Status:	BY [band]

Return:

BY [band], [stat]	

Where:

[band]	see Band Switch Table
[stat]	see Busy Table

Notes:

Example:

Sent:	BY 0	Requesting busy status of A band.
Return:	BY 0,1	Transceiver says that A band is busy.

CKEY	Call Key

Description:

Gets or select a function for the Call key. *Menu Item # 23*

Function:

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.

Send:

Status:	CKEY

Modify:	CKEY [val]

Return:

CKEY [val]	

Where:

[val]	see Call Key Table

Notes:

Example:

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

Description:

Gets or Adjust the display contrast. *Menu Item # 16*

Function:

Used to adjust the LCD Display Contrast level from 01 (weakest) to 16 (strongest).

Send:

Status:	CNT

Modify:	CNT [val]

Return:

CNT [val]	

Where:

[val]	See Contrast Table.

Notes:

Default value is 08.

Example:

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

Description:

Displays Call channel data.

Menu Item #
n/a

Function:

Returns all the saved data for the Call channel.

Send:

Status:	CR [band], [split]

Return:

CR [band], [split], [freq]	

Where:

[band]	see Ham Band Table
[split]	see Split Channel Table.
[freq]	See Frequency Table

Notes:

Example:

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

Description:

Enters data to the Call channel.

Menu Item #
n/a

Function:

Saves all data associated with the Call channel

Send:

Modify:	CW [split],[freq]

Return:

CW	

Where:

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

Notes:

Example:

Sent:	CW 0 00141990000,6,0,0,0,0,0,0, 25,09,001,000700000,0	Requesting call channel data be set to 00141990000,6,0,0,0,0,0,0,25,09,001,000700000,0 (see Freq Table).
Return:	CW	Transceiver confirms setting.

DATP	Packet Speed

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

Description:

Gets or sets the dual mode of transceiver.

Menu Item #
n/a

Function:

Toggle the transceiver from displaying one or two frequencies.

Send:

Status:	DL

Modify:	DL [val]

Return:

DL [val]	

Where:

[val]	see Dual Mode Table

Notes:

Example:

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.

DLK	DTMF Lock

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

Description:

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

Function:

Store a DTMF number in memory.

Send:

Status:	DM [cc] to get DTMF memory number location.

Modify:	DM [cc], [num] to set number in DTMF memory number location.

Return:

DM [cc], [num]	

Where:

[cc]	see DTMF Memory Locations.
[num]	see DTMF Table.

Notes:

[num] is a maximum of 16 digits.

Example:

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.

DMN	Get/Set DTMF Memory Name Location

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

Description:

Instructs transceiver to move down.

Menu Item #
n/a

Function:

Moves down one memory channel in MR mode or down one frequency step in VFO mode.

Send:

Modify:	DW

Return:

DW	

Where:

n/a	

Notes:

Same as rotating Tuning Control one click counter-clockwise. See UP.

Example:

Sent:	DW	Requesting that VFO move down.
Return:	DW	Transceiver confirming that VFO moves down.

ELK	Tune Enable

Description:

Get or set Tune Enable Flag. *Menu Item # 07*

Function:

If transceiver is locked and Tune Enable in on, Tuning Control may be used to change frequency.

Send:

Status:	ELK

Modify:	ELK [val]

Return:

ELK [val]	

Where:

[val]	See Logic Table

Notes:

Example:

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

Description:

Returns list of band limits.

Menu Item #
n/a

Returns list of band limits.

Function:

Returns a list of band limits.

Send:

Status:	FL [band]

Return:

FL [band], [list]	

Where:

[band]	see Band Switch Table
[list]	see Band Limits Table

Notes:

Example:

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

Description:

Returns or sets the current display frequency and step size.

Menu Item #
n/a

Function:

Returns or sets the current display frequency and step size.

Send:

Status:	FQ

Modify:	FQ [freq], [step]

Return:

FQ [freq], [step]	

Where:

[freq]	is an eleven (11) digit frequency in Hz.
[step]	see Step Size Table.

Notes:

Example:

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

Description:

Gets or sets the fine-tuning step size.

Menu Item #
n/a

Function:

Selects fine tuning frequency step from 33 Hz, 100 Hz, 500 Hz, or 1000 Hz.

Send:

Status:	FST

Modify:	FST [val]

Return:

FST [val]	

Where:

[val]	see Fine Tuning Step Size Table

Notes:

Example:

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

Description:

Returns the radio identification.

Menu Item #
n/a

Function:

Returns the radio type as a string. Can be used to validate that the radio is in communication with computer.

Send:

Status:	ID

Return:

ID [id]	

Where:

n/a	

Notes:

Example:

Sent:	ID	Request ID of transceiver.
Return:	ID TH-F6	Transceiver says that it is a TH-F6.

LAN	Get/Set Default Language

Description:

Displays or sets the default language. *Menu Item # 27*

Function:

For selecting either English or Japanese (Katakana) for menu descriptions.

Send:

Status:	LAN to get language.

Modify:	LAN [lang] to set language.

Return:

LAN [lang]	

Where:

[lang]	see Language Table.

Notes:

Example:

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

Description:

Gets or sets the radio lock function.

Menu Item #
n/a

Function:

The lock function disables most of the keys to prevent accidental activation of a function.

Send:

Status:	LK

Modify:	LK [val]

Return:

LK [val]	

Where:

[val]	see Lock Table

Notes:

Example:

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

Description:

Turns on or off or gets state of the light.

Menu Item #
n/a

Function:

Used to illuminate the transceiver.

Send:

Status:	LMP

Modify:	LMP [val]

Return:

LMP [val]	

Where:

[val]	see Logic Table

Notes:

Example:

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

Description:

Switch display to memory channel or get memory channel of display.

Menu Item #
n/a

Function:

Returns the memory channel stored in the display or will switch the display to a particular memory channel.

Send:

Status:	MC [band]

Modify:	MC [band], [name]

Return:

MC [band], [name]	

Where:

[band]	see Band Switch Table
[name]	see Memory Channel Table.

Notes:

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.

Example:

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

Description:

Set or returns current modulation mode.

Menu Item #
n/a

Function:

Set or returns the modulation mode of the current active band (A/B).

Send:

Status:	MD

Modify:	MD [mode]

Return:

MD [mode]	

Where:

[mode]	See Modulation Mode Table.

Notes:

Example:

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

Description:

Displays or sets the power on greeting message. *Menu Item # 15*

Function:

The greeting message that is displayed when transceiver is turned on.

Send:

Status:	MES to get greeting

Modify:	MES [message] to set greeting

Return:

MES [message]	

Where:

[message]	see Character Table.

Notes:

[message] is a maximum of eight (8) characters.

Example:

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

Description:

Gets or sets the Memory Group Link Channels. *Menu Item # 02*

Function:

Memory channels are divided into eight (8) groups. Memory Group Link is used to link two or more groups for scanning.

Send:

Status:	MGL

Modify:	MGL [val]

Return:

MGL [val]	

Where:

[val]	Are the linked memory groups (0-7). All groups not displayed are assumed to be free.

Notes:

Example: (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

Description:

Get or set name of memory channel.

Menu Item #
n/a

Function:

Get or set the name of a memory channel.

Send:

Status:	MNA

Modify:	MNA [mem],[name]

Return:

MNA [mem],[name]	

Where:

[mem]	see Memory Channel Table.
[name]	see Character Table.

Notes:

[name] is a maximum of eight (8) characters.

Example:

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

Description:

Set or get the name/frequency mode of display.

Menu Item #
n/a

Function:

Gets or sets the display mode. Display can be a numeric frequency or an alphanumeric name.

Send:

Status:	MNF

Modify:	MNF [val]

Return:

MNF [val]	

Where:

[val]	See Name/Frequency Mode Table

Notes:

Changes mode of both A and B channels.

Example:

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.

MR	Memory Channel Read

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

Description:

Gets or sets the memory recall method. *Menu Item # 03*

Function:

Used to configure transceiver to recall only the memory channels for the current operating band.

Send:

Status:	MRM

Modify:	MRM [val]

Return:

MRM [val]	

Where:

[val]	see Memory Recall Table.

Notes:

Example:

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”.

MW	Memory Write

Description:

Store memory channel.

Menu Item #
n/a

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

Description:

Gets or sets the Narrow FM mode of a band. *Menu Item # 29*

Function:

Selects between:
Off - wide band FM (5 KHz) deviation or
On - narrow band FM (2.5 KHz) deviation.

Send:

Status:	NAR [band]

Modify:	NAR [band],[val]

Return:

NAR [band],[val]	

Where:

[band]	see Ham Band Table.
[val]	see Logic Table.

Notes:

Example:

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

Description:

Set or get Beat Shift function. *Menu Item # 25*

Function:

Used the reduce harmonics from microprocessors clock oscillator.

Send:

Status:	NSFT

Modify:	NSFT [val]

Return:

NSFT [val]	

Where:

[val]	see Logic Table.

Notes:

Example:

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

Description:

Sets the transmit power on a band.

Menu Item #
n/a

Function:

Changes the power output level on the current band.

Send:

Status:	PC [band]

Modify:	PC [band], [pwr]

Return:

PC [band], [pwr]	

Where:

[band]	see Band Switch Table
[pwr]	see Power Level Table

Notes:

Example:

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

Description:

Gets or sets the DTMF pause duration. *Menu Item # 13*

Function:

Selects the pause duration for a space character entered into a DTMF number field.

Send:

Status:	PT

Modify:	PT [val]

Return:

PT [val]	

Where:

[val]	see DTMF Pause Table

Notes:

Example:

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

Description:

Displays the VFO limits for a band. *Menu Item # 04*

Function:

Displays a list of the band limits for A and B bands.

Send:

Status:	PV [band]

Modify:	PV [band],[f1], [f2]

Return:

PV [band],[f1], [f2]	

Where:

[band]	see Band Table. Only used on A band.
[f1], [f2]	is a five (5)-digit frequency representing the lower and upper frequency limits.

Notes:

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.

Example:

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

Description:

Displays or sets the current band, when in VFO mode.

Menu Item #
n/a

Function:

Gets or sets the current band. Transceiver must be in VFO mode.

Send:

Status:	RBN

Modify:	RBN [band]

Return:

RBN [band]	

Where:

[band]	see Band Table

Notes:

Example:

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

Description:

Switches transceiver to receive mode.

Menu Item #
n/a

Function:

Sets transceiver to receive.

Send:

Modify:	RX

Return:

RX	

Where:

n/a	

Notes:

Example:

Sent:	RX	Set transceiver to receiver mode.
Return:	RX	Transceiver confirms.

SCR	Scan Resume

Description:

Get or set the Scan Resume method. *Menu Item # 01*

Function:

The method used the continue scanning after the transceiver stops on a detected signal.

Send:

Status:	SCR

Modify:	SCR [val]

Return:

SCR [val]	

Where:

[val]	see Scan Resume Table

Notes:

Example:

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

Description:

Displays or sets the squelch level. *Menu Item #* *n/a*

Function:

Sets or gets the squelch level for a band.

Send:

Status:	SQ [band]

Modify:	SQ [band], [lev]

Return:

SQ [band], [lev]	

Where:

[band]	see Band Switch Table
[lev]	is a value from 00-05.

Notes:

00 is open squelch.

Example:

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

Description:

Sets and performs the reset function.

Menu Item # 31

Function:

Resets various portions of transceiver.

Send:

Modify:	SR [val]

Return:

No return	

Where:

[val]	see System Reset Table

Notes:

Example:

Sent:	SR 1	Perform VFO Reset.
Return:		No return value.

SV	Battery Saver

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

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

Description:

Set or gets the 1750 Hz Tone function. *Menu Item # 24*

Function:

Used to hold the transmitted 1750 Hz tone (TH-F7E only).

Send:

Status:	TH

Modify:	TH [val]

Return:

TH [val]	

Where:

[val]	see Logic Table

Notes:

Example:

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

Description:

Turns on or off or gets state of the Transmit Inhibit function. *Menu Item # 08*

Function:

Prevents accidental or unauthorized transmission.

Send:

Status:	TXS

Modify:	TXS [val]

Return:

TXS [val]	

Where:

[val]	see Logic Table

Notes:

Example:

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

Description:

Turns on or off or gets state of the DTMF Hold function. *Menu Item # 12*

Function:

Causes the transceiver to remain in transmit mode for two

Send:

Status:	THX

Modify:	THX [val]

Return:

THX [val]	

Where:

[val]	see Logic Table

Notes:

Example:

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

Description:

Sets or gets DTMF Speed function. *Menu Item # 11*

Function:

Adjust DTMF number transmission speed.

Send:

Status:	TSP

Modify:	TSP [val]

Return:

TSP [val]	

Where:

[val]	see DTMF Speed Table

Notes:

Example:

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

Description:

Transmit a 1750Hz tone.

Menu Item #
n/a

Function:

Will transmit a 1750 Hz tone until a RX command is received.

Send:

Modify:	TT

Return:

TT	

Where:

n/a	

Notes:

May be stopped by RX command.

Example:

Sent:	TT	Have transceiver send a 1750 Hz tone.
Return:	TT	Transceiver acknowledges,

TYD	Radio Type

Description:

Displays the radio type.

Menu Item #
n/a

Function:
Unknown

Send:

Status:	TYD

Return:

TYD [val1], [val2]	

Where:

[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.

Notes:

Example:

Sent:	TYD	Request radio type.
Return:	TYD KK,0F	Transceiver responds.

TX	Transmit

Description:

Switches transceiver to transmit mode.

Menu Item #
n/a

Function:

Transceiver will transmit until an RX command is received.

Send:

Modify:	TX

Return:

TX	

Where:

n/a	

Notes:

Can be stopped by RX command.

Example:

Sent:	TX	Have transceiver enter the transmit mode.
Return:	TX	Transceiver confirms.

UP	**Up**

Description:

Moves up one memory channel in MR mode or up one frequency step in VFO mode.

Menu Item #
n/a

Function:

Moves up one memory channel in MR mode or up one frequency step in VFO mode.

Send:

Modify:	UP

Return:

UP	

Where:

n/a	

Notes:

Same as rotating Tuning Control one click clockwise. See DW.

Example:

Sent:	UP	Have transceiver move up.
Return:	UP	Transceiver confirms.

VMC	Mode of the VFO band

Description:

Get/Set the mode of the VFO band. *Menu Item #* *n/a*

Function:

Will switch the A or B band from VFO, MR, or CALL mode.

Send:

Status:	VMC [band] to get the mode of band.

Modify:	VMC [band], [mode] to set the mode of band.

Return:

VMC [band], [mode]	

Where:

[band]	see Band Switch Table
[mode]	see VFO Mode Table

Notes:

Example:

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

Description:

Sets or gets VOX on transmit.

Menu Item #
n/a

Function:

VOX Transmit automatically switches to transmit when the VOX circuitry senses sound in the microphone.

Send:

Status:	VOX

Modify:	VOX [val]

Return:

VOX [val]	

Where:

[val]	see Logic Table

Notes:

Example:

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

Description:

Read the VFO Setting for specified band.

Menu Item #
n/a

Function:

Reads all data associated with a VFO.

Send:

Status:	VR [band]

Get:

VR [band],[freq]

Where:

[band]	see Band Table
[freq]	See Freq Table. Lockout value excluded.

Notes:

Example:

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

Description:

Sets the VFO values of the specified band.

Menu Item #
n/a

Function:

Saves all data associated with a VFO.

Send:

Modify:	VW [band],[freq]

Return:

VW	

Where:

[band]	See Ham Band Table.
[freq]	See Freq Table. Lockout value excluded.

Notes:

Example:

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

Description:

Gets or sets the VOX On Busy function. *Menu Item # 20*

Function:

Configure transceiver to force VOX transmission even if the transceiver is receiving a signal on A or B band.

Send:

Status:	VXB

Modify:	VXB [val]

Return:

VXB [val]	

Where:

[val]	see Logic Table

Notes:

Example:

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

Description:

Gets or sets the VOX Delay time. *Menu Item # 22*

Function:

Sets or gets the delay time between transmit and receive after sound input stops.

Send:

Status:	VXD

Modify:	VXD [val]

Return:

VXD [val]	

Where:

[val]	see VOX Delay Table

Notes:

Example:

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

Description:

Gets or sets the VOX Gain. *Menu Item # 21*

Function:

Controls the VOX circuit to detect the presence or absence of sound.

Send:

Status:	VXG

Modify:	VXG [val]

Return:

VXG [val]	

Where:

[val]	is a number from 0 to 9. The default value is 4.

Notes:

Example:

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

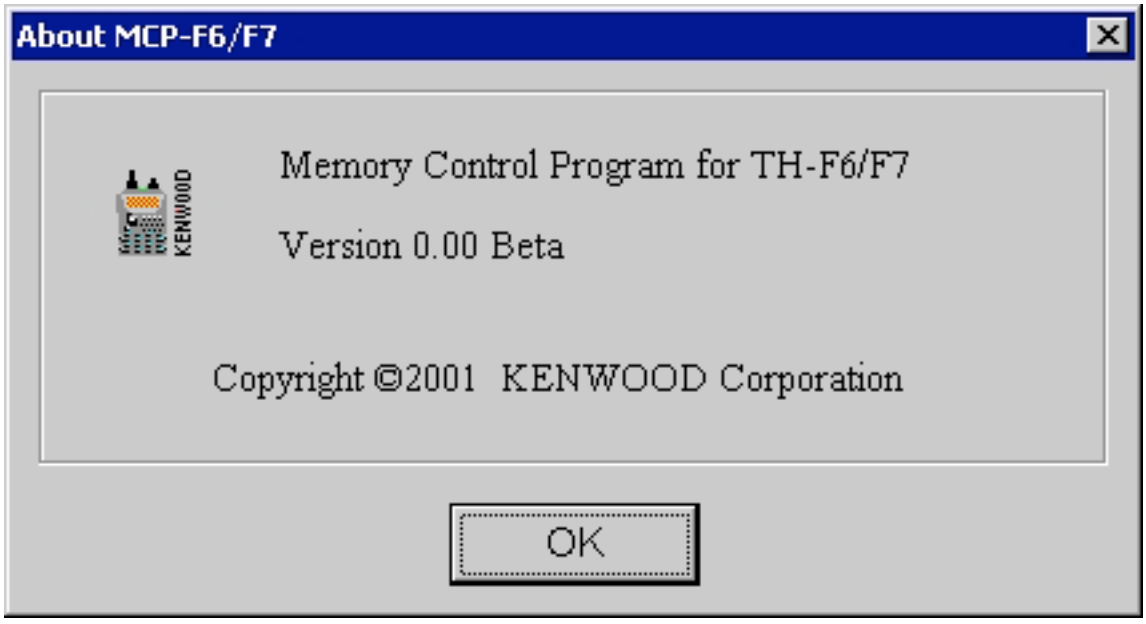
Command	Description	Menu Item
SCR	Scan Resume	01
MGL	Memory Group Link	02
MRM	Memory Recall Method	03
PV	Program VFO Limits	04
ARO	Auto Repeater Offset	05
unknown	Offset	06
ELK	Tune Enable	07
THS	Transmit Inhibit	08
unavailable	SP/MIC Jack	09
DM/ DMN	Get/Set DTMF Memory Location	10
TSP	DTMF Speed	11
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)		

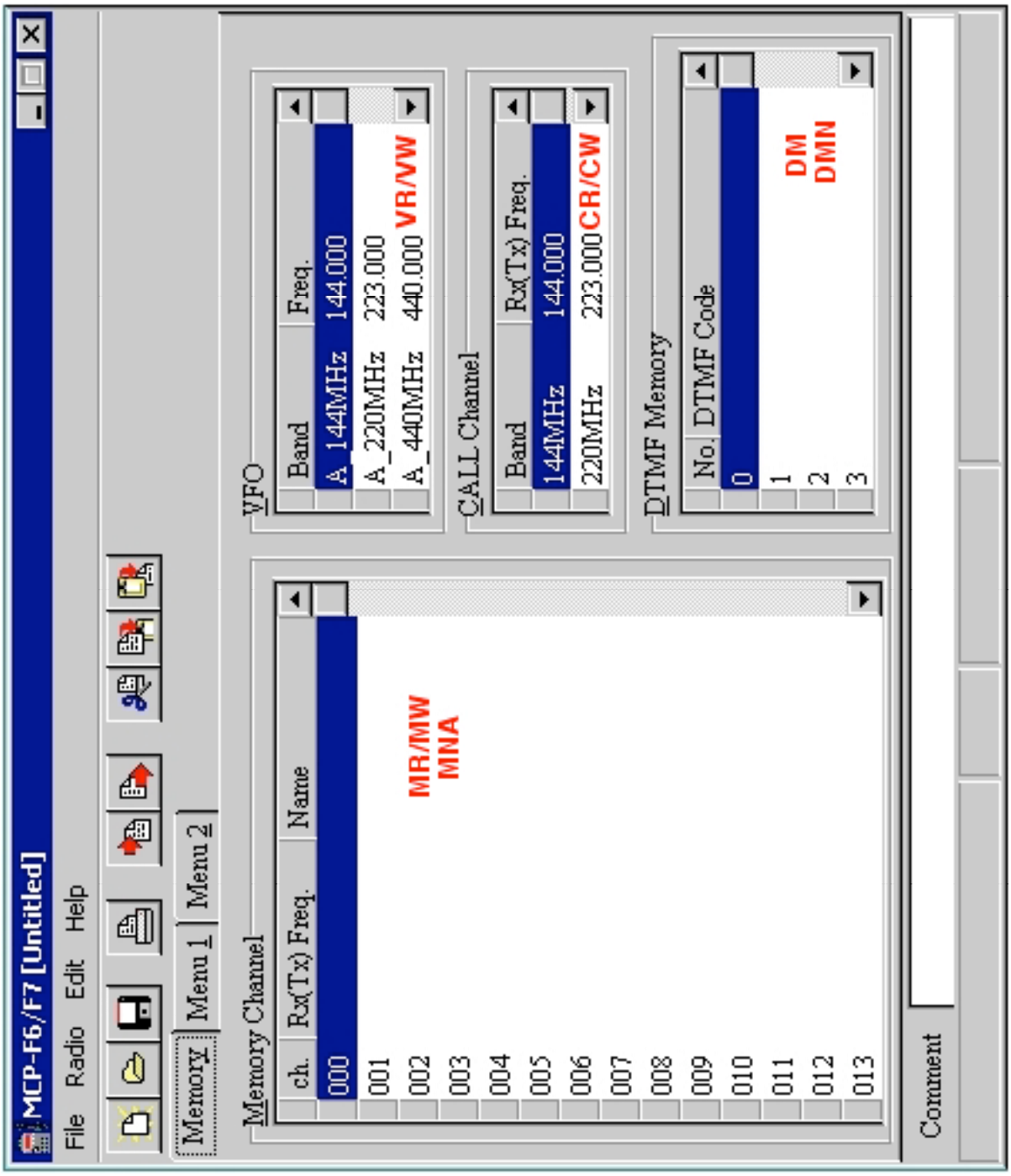
ASC	REV (1s)		
	MN-f (1s)		
Memory Scan Start	MR (1s)		
MHz Scan/Group Scan Start	MHz (1s)		
	FINE (1s)		
	ENT (1s)		
	CALL (1s)		
	F,LOW (1s)		
	F,BAND (1s)		
	F,A/B (1s)		
	F, F (1s)		
	F,INFO (1s)		
	F,SQL (1s)		
	F,BAL (1s)		
	F,VFO (1s)		
CTCSS/DCS ID Scan	F,TONE (1s)		
	F,REV (1s)		
	F,MN-f (1s)		
	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]		

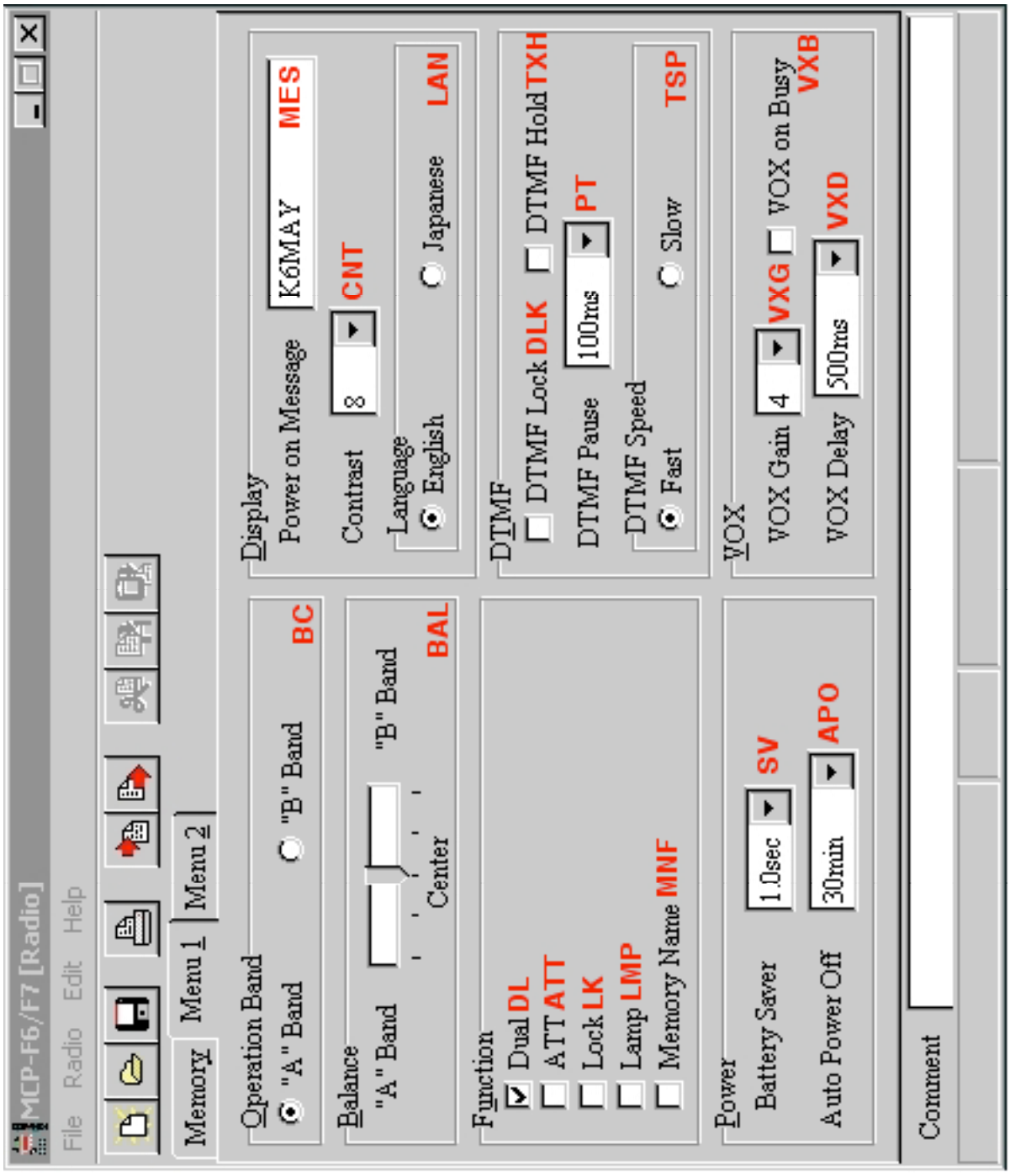
Splash Screen



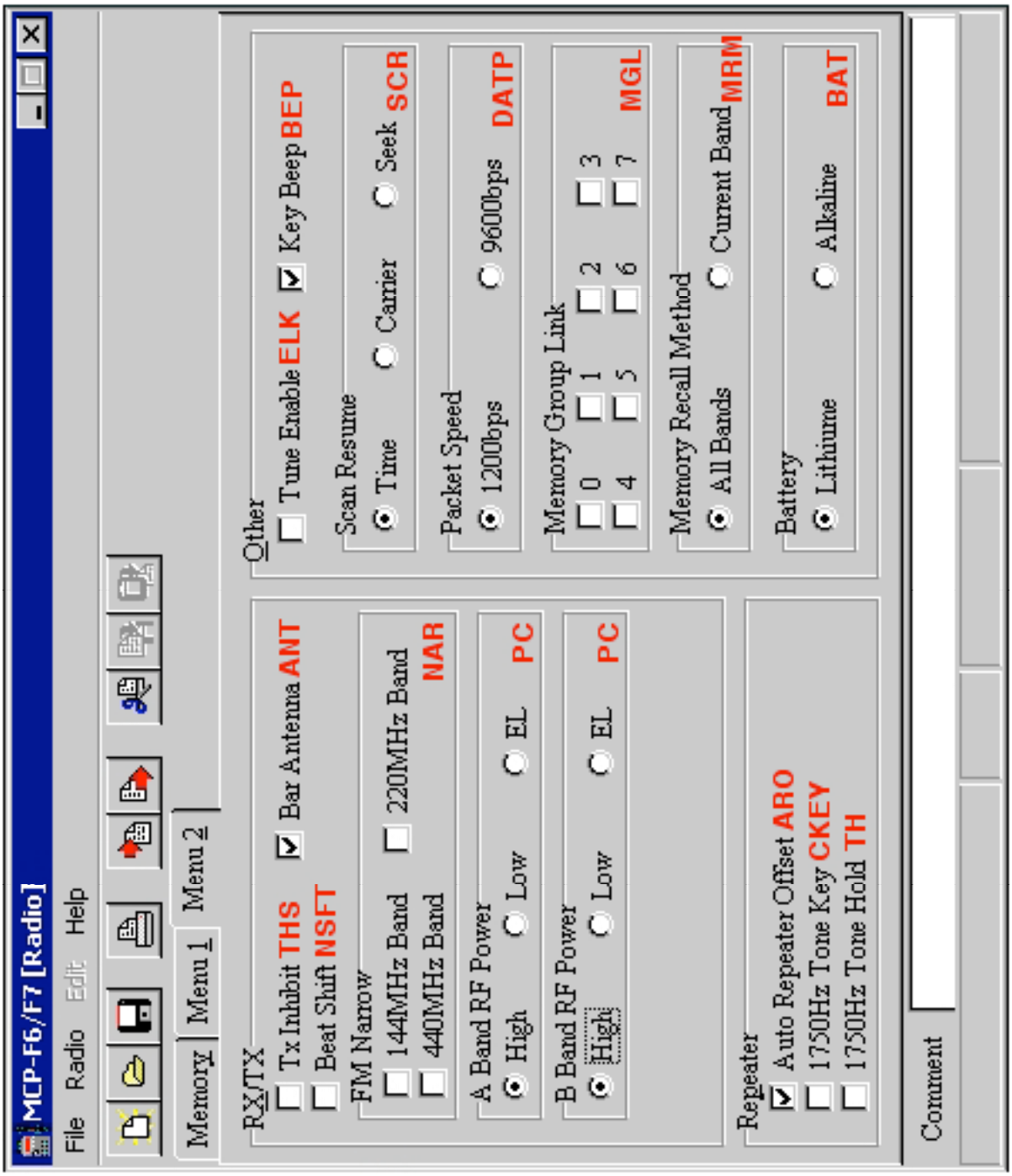
Memory Screen



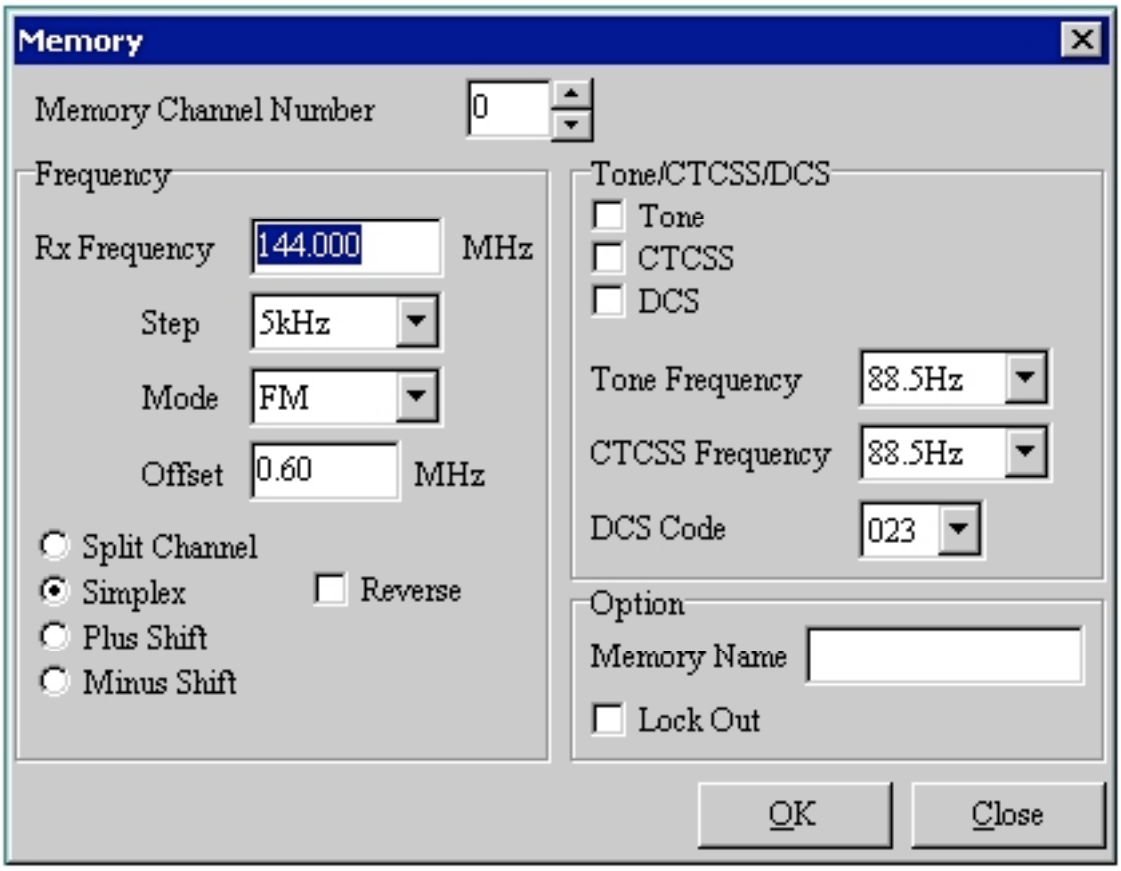
Menu1 Screen



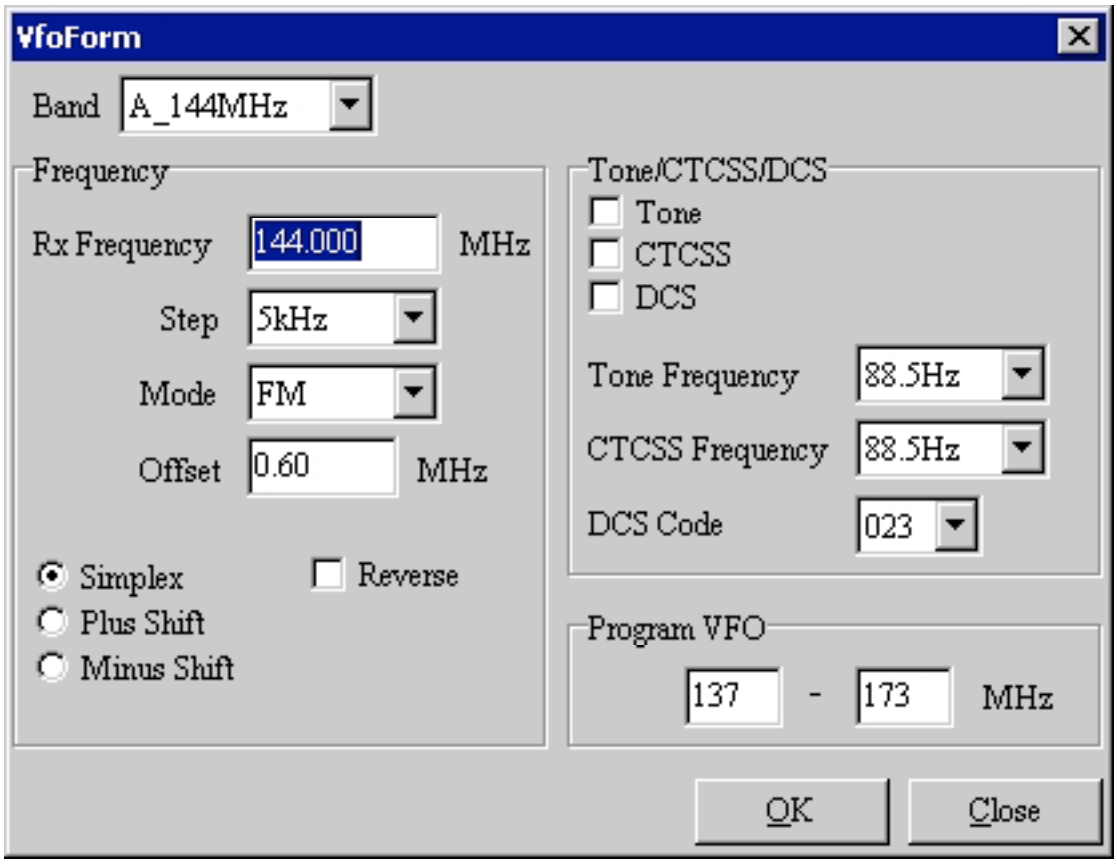
Menu2 Screen



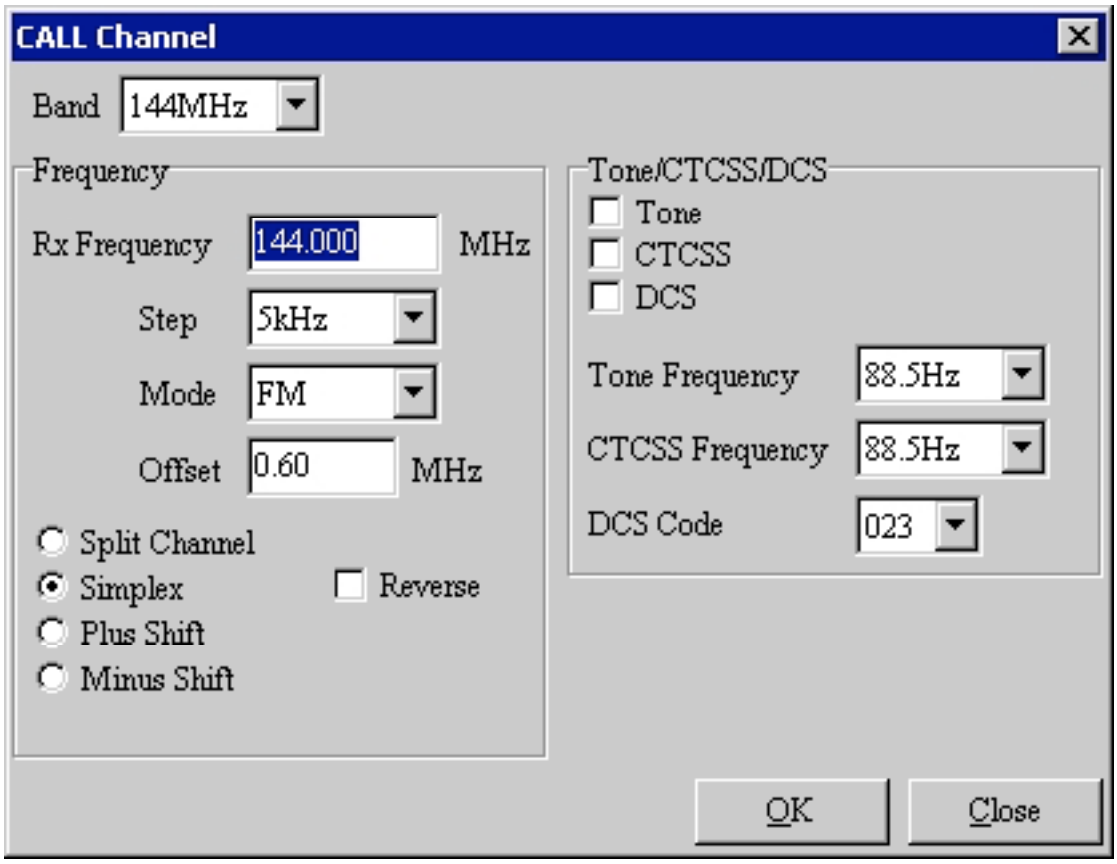
Memory Channel Entry Screen



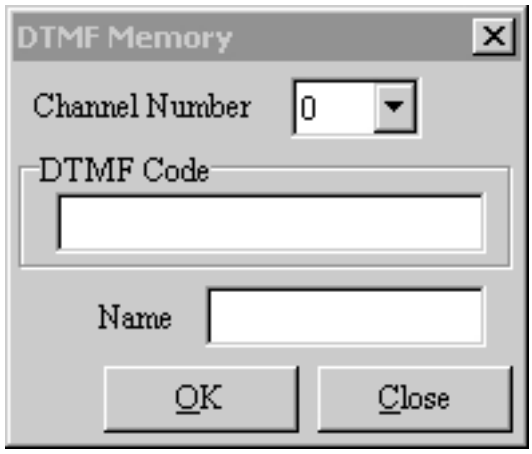
VFO Entry Screen



Call Channel Entry Screen



DTMF Entry Screen



Hardware Interface for Macintosh

Format of the F6/F7 Kenwood File

	Description
__COMMENT__	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__	
__CALL DATA__	
__VFO DATA__	
__DTMF DATA__	
__RADIO MENU__	

```
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
BC 0
BEP 1
BEL 0,0
BEL 1,0
BY 0,1
BY 1,1
CKEY 0
CNT 08
CW 0,00144000000,0,0,0,0,0,0,08,08,000,000600000,0
CW 0,00223000000,7,0,0,0,0,0,08,08,000,001600000,0
CW 0,00440000000,8,0,0,0,0,0,08,08,000,005000000,0
DATP 0
DL 1
DLK 0
DM 00,
DM 01,
DM 02,
DM 03,
DM 04,
DM 05,
DM 06,
DM 07,
DM 08,
DM 09,
DMN 00,
DMN 01,
DMN 02,
DMN 03,
DMN 04,
DMN 05,
DMN 06,
DMN 07,
DMN 08,
DMN 09,
ELK 0
FL 0,00137,00174,00216,00260,00410,00470,
FL
1,0000010,0000180,0000180,0002970,0002970,0005400,0005400,0010800,001
08,00137,00137,00174,00174,00216,00216,00400,00400,00470,00470,00806,
00806,01300
FQ 00144000000,0
FST 1
```

```
ID TH-F6
LAN 0
LK 0
LMP 0
MC 0,
MC 1,
MD 0
MES HELLO !!
MGL
MNA 000,
MNA 001,
MNA 002,
MNA 003,
MNA 004,
MNA 005,
MNA 006,
MNA 007,
MNA 008,
MNA 009,
MNA 010,
MNA 011,
MNA 012,
MNA 013,
MNA 014,
MNA 015,
MNA 016,
MNA 017,
MNA 018,
MNA 019,
MNA 020,
MNA 021,
MNA 022,
MNA 023,
MNA 024,
MNA 025,
MNA 026,
MNA 027,
MNA 028,
MNA 029,
MNA 030,
MNA 031,
MNA 032,
MNA 033,
MNA 034,
MNA 035,
MNA 036,
MNA 037,
MNA 038,
MNA 039,
MNA 040,
MNA 041,
```

MNA 042,
MNA 043,
MNA 044,
MNA 045,
MNA 046,
MNA 047,
MNA 048,
MNA 049,
MNA 050,
MNA 051,
MNA 052,
MNA 053,
MNA 054,
MNA 055,
MNA 056,
MNA 057,
MNA 058,
MNA 059,
MNA 060,
MNA 061,
MNA 062,
MNA 063,
MNA 064,
MNA 065,
MNA 066,
MNA 067,
MNA 068,
MNA 069,
MNA 070,
MNA 071,
MNA 072,
MNA 073,
MNA 074,
MNA 075,
MNA 076,
MNA 077,
MNA 078,
MNA 079,
MNA 080,
MNA 081,
MNA 082,
MNA 083,
MNA 084,
MNA 085,
MNA 086,
MNA 087,
MNA 088,
MNA 089,
MNA 090,
MNA 091,
MNA 092,

MNA 093,
MNA 094,
MNA 095,
MNA 096,
MNA 097,
MNA 098,
MNA 099,
MNA 100,
MNA 101,
MNA 102,
MNA 103,
MNA 104,
MNA 105,
MNA 106,
MNA 107,
MNA 108,
MNA 109,
MNA 110,
MNA 111,
MNA 112,
MNA 113,
MNA 114,
MNA 115,
MNA 116,
MNA 117,
MNA 118,
MNA 119,
MNA 120,
MNA 121,
MNA 122,
MNA 123,
MNA 124,
MNA 125,
MNA 126,
MNA 127,
MNA 128,
MNA 129,
MNA 130,
MNA 131,
MNA 132,
MNA 133,
MNA 134,
MNA 135,
MNA 136,
MNA 137,
MNA 138,
MNA 139,
MNA 140,
MNA 141,
MNA 142,
MNA 143,

MNA 144,
MNA 145,
MNA 146,
MNA 147,
MNA 148,
MNA 149,
MNA 150,
MNA 151,
MNA 152,
MNA 153,
MNA 154,
MNA 155,
MNA 156,
MNA 157,
MNA 158,
MNA 159,
MNA 160,
MNA 161,
MNA 162,
MNA 163,
MNA 164,
MNA 165,
MNA 166,
MNA 167,
MNA 168,
MNA 169,
MNA 170,
MNA 171,
MNA 172,
MNA 173,
MNA 174,
MNA 175,
MNA 176,
MNA 177,
MNA 178,
MNA 179,
MNA 180,
MNA 181,
MNA 182,
MNA 183,
MNA 184,
MNA 185,
MNA 186,
MNA 187,
MNA 188,
MNA 189,
MNA 190,
MNA 191,
MNA 192,
MNA 193,
MNA 194,

MNA 195,
MNA 196,
MNA 197,
MNA 198,
MNA 199,
MNA 200,
MNA 201,
MNA 202,
MNA 203,
MNA 204,
MNA 205,
MNA 206,
MNA 207,
MNA 208,
MNA 209,
MNA 210,
MNA 211,
MNA 212,
MNA 213,
MNA 214,
MNA 215,
MNA 216,
MNA 217,
MNA 218,
MNA 219,
MNA 220,
MNA 221,
MNA 222,
MNA 223,
MNA 224,
MNA 225,
MNA 226,
MNA 227,
MNA 228,
MNA 229,
MNA 230,
MNA 231,
MNA 232,
MNA 233,
MNA 234,
MNA 235,
MNA 236,
MNA 237,
MNA 238,
MNA 239,
MNA 240,
MNA 241,
MNA 242,
MNA 243,
MNA 244,
MNA 245,

MNA 246,
MNA 247,
MNA 248,
MNA 249,
MNA 250,
MNA 251,
MNA 252,
MNA 253,
MNA 254,
MNA 255,
MNA 256,
MNA 257,
MNA 258,
MNA 259,
MNA 260,
MNA 261,
MNA 262,
MNA 263,
MNA 264,
MNA 265,
MNA 266,
MNA 267,
MNA 268,
MNA 269,
MNA 270,
MNA 271,
MNA 272,
MNA 273,
MNA 274,
MNA 275,
MNA 276,
MNA 277,
MNA 278,
MNA 279,
MNA 280,
MNA 281,
MNA 282,
MNA 283,
MNA 284,
MNA 285,
MNA 286,
MNA 287,
MNA 288,
MNA 289,
MNA 290,
MNA 291,
MNA 292,
MNA 293,
MNA 294,
MNA 295,
MNA 296,

MNA 297,
MNA 298,
MNA 299,
MNA 300,
MNA 301,
MNA 302,
MNA 303,
MNA 304,
MNA 305,
MNA 306,
MNA 307,
MNA 308,
MNA 309,
MNA 310,
MNA 311,
MNA 312,
MNA 313,
MNA 314,
MNA 315,
MNA 316,
MNA 317,
MNA 318,
MNA 319,
MNA 320,
MNA 321,
MNA 322,
MNA 323,
MNA 324,
MNA 325,
MNA 326,
MNA 327,
MNA 328,
MNA 329,
MNA 330,
MNA 331,
MNA 332,
MNA 333,
MNA 334,
MNA 335,
MNA 336,
MNA 337,
MNA 338,
MNA 339,
MNA 340,
MNA 341,
MNA 342,
MNA 343,
MNA 344,
MNA 345,
MNA 346,
MNA 347,

MNA 348,
MNA 349,
MNA 350,
MNA 351,
MNA 352,
MNA 353,
MNA 354,
MNA 355,
MNA 356,
MNA 357,
MNA 358,
MNA 359,
MNA 360,
MNA 361,
MNA 362,
MNA 363,
MNA 364,
MNA 365,
MNA 366,
MNA 367,
MNA 368,
MNA 369,
MNA 370,
MNA 371,
MNA 372,
MNA 373,
MNA 374,
MNA 375,
MNA 376,
MNA 377,
MNA 378,
MNA 379,
MNA 380,
MNA 381,
MNA 382,
MNA 383,
MNA 384,
MNA 385,
MNA 386,
MNA 387,
MNA 388,
MNA 389,
MNA 390,
MNA 391,
MNA 392,
MNA 393,
MNA 394,
MNA 395,
MNA 396,
MNA 397,
MNA 398,

```
MNA 399,
MNA L0,
MNA L1,
MNA L2,
MNA L3,
MNA L4,
MNA L5,
MNA L6,
MNA L7,
MNA L8,
MNA L9,
MNA U0,
MNA U1,
MNA U2,
MNA U3,
MNA U4,
MNA U5,
MNA U6,
MNA U7,
MNA U8,
MNA U9,
MNA I-0,WEATHER
MNA I-1,WEATHER
MNA I-2,WEATHER
MNA I-3,WEATHER
MNA I-4,WEATHER
MNA I-5,WEATHER
MNA I-6,WEATHER
MNA I-7,WEATHER
MNA I-8,WEATHER
MNA I-9,WEATHER
MNA PR1,
MNA PR2,
MNF 0
MW 0,000
MW 0,001
MW 0,002
MW 0,003
MW 0,004
MW 0,005
MW 0,006
MW 0,007
MW 0,008
MW 0,009
MW 0,010
MW 0,011
MW 0,012
MW 0,013
MW 0,014
MW 0,015
MW 0,016
```

```
MW 0,017
MW 0,018
MW 0,019
MW 0,020
MW 0,021
MW 0,022
MW 0,023
MW 0,024
MW 0,025
MW 0,026
MW 0,027
MW 0,028
MW 0,029
MW 0,030
MW 0,031
MW 0,032
MW 0,033
MW 0,034
MW 0,035
MW 0,036
MW 0,037
MW 0,038
MW 0,039
MW 0,040
MW 0,041
MW 0,042
MW 0,043
MW 0,044
MW 0,045
MW 0,046
MW 0,047
MW 0,048
MW 0,049
MW 0,050
MW 0,051
MW 0,052
MW 0,053
MW 0,054
MW 0,055
MW 0,056
MW 0,057
MW 0,058
MW 0,059
MW 0,060
MW 0,061
MW 0,062
MW 0,063
MW 0,064
MW 0,065
MW 0,066
MW 0,067
```

```
MW 0,068
MW 0,069
MW 0,070
MW 0,071
MW 0,072
MW 0,073
MW 0,074
MW 0,075
MW 0,076
MW 0,077
MW 0,078
MW 0,079
MW 0,080
MW 0,081
MW 0,082
MW 0,083
MW 0,084
MW 0,085
MW 0,086
MW 0,087
MW 0,088
MW 0,089
MW 0,090
MW 0,091
MW 0,092
MW 0,093
MW 0,094
MW 0,095
MW 0,096
MW 0,097
MW 0,098
MW 0,099
MW 0,100
MW 0,101
MW 0,102
MW 0,103
MW 0,104
MW 0,105
MW 0,106
MW 0,107
MW 0,108
MW 0,109
MW 0,110
MW 0,111
MW 0,112
MW 0,113
MW 0,114
MW 0,115
MW 0,116
MW 0,117
MW 0,118
```

```
MW 0,119
MW 0,120
MW 0,121
MW 0,122
MW 0,123
MW 0,124
MW 0,125
MW 0,126
MW 0,127
MW 0,128
MW 0,129
MW 0,130
MW 0,131
MW 0,132
MW 0,133
MW 0,134
MW 0,135
MW 0,136
MW 0,137
MW 0,138
MW 0,139
MW 0,140
MW 0,141
MW 0,142
MW 0,143
MW 0,144
MW 0,145
MW 0,146
MW 0,147
MW 0,148
MW 0,149
MW 0,150
MW 0,151
MW 0,152
MW 0,153
MW 0,154
MW 0,155
MW 0,156
MW 0,157
MW 0,158
MW 0,159
MW 0,160
MW 0,161
MW 0,162
MW 0,163
MW 0,164
MW 0,165
MW 0,166
MW 0,167
MW 0,168
MW 0,169
```

```
MW 0,170
MW 0,171
MW 0,172
MW 0,173
MW 0,174
MW 0,175
MW 0,176
MW 0,177
MW 0,178
MW 0,179
MW 0,180
MW 0,181
MW 0,182
MW 0,183
MW 0,184
MW 0,185
MW 0,186
MW 0,187
MW 0,188
MW 0,189
MW 0,190
MW 0,191
MW 0,192
MW 0,193
MW 0,194
MW 0,195
MW 0,196
MW 0,197
MW 0,198
MW 0,199
MW 0,200
MW 0,201
MW 0,202
MW 0,203
MW 0,204
MW 0,205
MW 0,206
MW 0,207
MW 0,208
MW 0,209
MW 0,210
MW 0,211
MW 0,212
MW 0,213
MW 0,214
MW 0,215
MW 0,216
MW 0,217
MW 0,218
MW 0,219
MW 0,220
```

```
MW 0,221
MW 0,222
MW 0,223
MW 0,224
MW 0,225
MW 0,226
MW 0,227
MW 0,228
MW 0,229
MW 0,230
MW 0,231
MW 0,232
MW 0,233
MW 0,234
MW 0,235
MW 0,236
MW 0,237
MW 0,238
MW 0,239
MW 0,240
MW 0,241
MW 0,242
MW 0,243
MW 0,244
MW 0,245
MW 0,246
MW 0,247
MW 0,248
MW 0,249
MW 0,250
MW 0,251
MW 0,252
MW 0,253
MW 0,254
MW 0,255
MW 0,256
MW 0,257
MW 0,258
MW 0,259
MW 0,260
MW 0,261
MW 0,262
MW 0,263
MW 0,264
MW 0,265
MW 0,266
MW 0,267
MW 0,268
MW 0,269
MW 0,270
MW 0,271
```

```
MW 0,272
MW 0,273
MW 0,274
MW 0,275
MW 0,276
MW 0,277
MW 0,278
MW 0,279
MW 0,280
MW 0,281
MW 0,282
MW 0,283
MW 0,284
MW 0,285
MW 0,286
MW 0,287
MW 0,288
MW 0,289
MW 0,290
MW 0,291
MW 0,292
MW 0,293
MW 0,294
MW 0,295
MW 0,296
MW 0,297
MW 0,298
MW 0,299
MW 0,300
MW 0,301
MW 0,302
MW 0,303
MW 0,304
MW 0,305
MW 0,306
MW 0,307
MW 0,308
MW 0,309
MW 0,310
MW 0,311
MW 0,312
MW 0,313
MW 0,314
MW 0,315
MW 0,316
MW 0,317
MW 0,318
MW 0,319
MW 0,320
MW 0,321
MW 0,322
```

```
MW 0,323
MW 0,324
MW 0,325
MW 0,326
MW 0,327
MW 0,328
MW 0,329
MW 0,330
MW 0,331
MW 0,332
MW 0,333
MW 0,334
MW 0,335
MW 0,336
MW 0,337
MW 0,338
MW 0,339
MW 0,340
MW 0,341
MW 0,342
MW 0,343
MW 0,344
MW 0,345
MW 0,346
MW 0,347
MW 0,348
MW 0,349
MW 0,350
MW 0,351
MW 0,352
MW 0,353
MW 0,354
MW 0,355
MW 0,356
MW 0,357
MW 0,358
MW 0,359
MW 0,360
MW 0,361
MW 0,362
MW 0,363
MW 0,364
MW 0,365
MW 0,366
MW 0,367
MW 0,368
MW 0,369
MW 0,370
MW 0,371
MW 0,372
MW 0,373
```

```
MW 0,374
MW 0,375
MW 0,376
MW 0,377
MW 0,378
MW 0,379
MW 0,380
MW 0,381
MW 0,382
MW 0,383
MW 0,384
MW 0,385
MW 0,386
MW 0,387
MW 0,388
MW 0,389
MW 0,390
MW 0,391
MW 0,392
MW 0,393
MW 0,394
MW 0,395
MW 0,396
MW 0,397
MW 0,398
MW 0,399
MW 0,L0
MW 0,L1
MW 0,L2
MW 0,L3
MW 0,L4
MW 0,L5
MW 0,L6
MW 0,L7
MW 0,L8
MW 0,L9
MW 0,U0
MW 0,U1
MW 0,U2
MW 0,U3
MW 0,U4
MW 0,U5
MW 0,U6
MW 0,U7
MW 0,U8
MW 0,U9
MW 0,I-0,00163275000,0,0,0,0,0,0,08,08,000,000000000,0,0
MW 0,I-1,00162550000,0,0,0,0,0,0,08,08,000,000000000,0,0
MW 0,I-2,00162400000,0,0,0,0,0,0,08,08,000,000000000,0,0
MW 0,I-3,00162475000,0,0,0,0,0,0,08,08,000,000000000,0,0
MW 0,I-4,00162425000,0,0,0,0,0,0,08,08,000,000000000,0,0
```

```
MW 0,I-5,00162450000,0,0,0,0,0,0,08,08,000,000000000,0,0
MW 0,I-6,00162500000,0,0,0,0,0,0,08,08,000,000000000,0,0
MW 0,I-7,00162525000,0,0,0,0,0,0,08,08,000,000000000,0,0
MW 0,I-8,00161650000,0,0,0,0,0,0,08,08,000,000000000,0,0
MW 0,I-9,00161775000,0,0,0,0,0,0,08,08,000,000000000,0,0
MW 0,PR1
MW 0,PR2
MRM 0
NAR 0,0
NAR 1,0
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
SCR 0
SQ 0,02
SQ 1,02
SR 0
SV 5
TH 0
TSP 0
TXH 0
TXS 0
TYD KK,0F
VMC 0,0
VMC 1,0
VOX 0
VW 0,00144000000,0,0,0,0,0,0,08,08,000,000600000,0
VW 1,00223000000,7,0,0,0,0,0,08,08,000,001600000,0
VW 2,00440000000,8,0,0,0,0,0,08,08,000,005000000,0
VW 4,00000540000,4,0,0,0,0,0,08,08,000,000000000,2
VW 5,00003500000,0,0,0,0,0,0,08,08,000,000000000,3
VW 6,00051000000,4,0,0,0,0,0,08,08,000,000000000,0
VW 7,00087900000,B,0,0,0,0,0,08,08,000,000000000,1
VW 8,00118000000,5,0,0,0,0,0,08,08,000,000000000,2
VW 9,00144000000,0,0,0,0,0,0,08,08,000,000600000,0
VW A,00179750000,A,0,0,0,0,0,08,08,000,000000000,1
VW B,00223000000,7,0,0,0,0,0,08,08,000,001600000,0
VW C,00440000000,8,0,0,0,0,0,08,08,000,005000000,0
VW D,00475750000,A,0,0,0,0,0,08,08,000,000000000,1
VW E,01240000000,8,0,0,0,0,0,08,08,000,000000000,0
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: