

Baofeng UV-5RTips And Hints For Eyes-Free Operation

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Updates And Modifications

2 July 2012:

From Jim Unroe, KC9HI:

- Corrected information on changing power levels in memory mode
- Small procedural change for programming odd splits, mentioning the clearing of any CTCSS/DCS codes if they aren't needed, as in the example.
- Several typographical and labeling errors fixed.
- Changed the belt clip installation procedure, thanks Ed Griffin, W4KMA

30 June 2012:

- Added menu codes and moved DCS codes to a table Jim Mayes, KC5QDM
- Various typo, grammatical, and stylist changes: KB5ELV

Introduction

The Baofeng UV-5R is an inexpensive dualband handheld radio, operating on 2M and 70CM. This radio may be of interest to blind hams, since (unlike more expensive radios from the big three manufacturers) Baofeng has managed to implement limited speech feedback for some functions. While we would wish for more, such as voice confirmation of frequency, CTCSS/DCS settings, and so on, this radio provides a very usable alternative to other, more expensive handhelds from the traditional manufacturers.

Please feel free to distribute this document. please send additions, corrections, or modifications to me via Email to buddy@brannan.name

Thanks.

Any additions, corrections, clarifications, or suggestions are gratefully accepted. Please Email them to me for inclusion or incorporation into this guide. I can be reached by Email at:

Email: buddy@brannan.name

Notably, accurate key labels would be appreciated, especially where I don't have them. Also, correction of labels I have typed incorrectly is appreciated.

The latest version of this document can be had here:

<http://buddy.brannan.name/baofeng-uv5r-eyes-free.zip>

Acknowledgements

Thanks to the following fine folks for their assistance:

- Ed Griffin, W4KMA, at Import Communications (<http://www.importcommunications.com>) for providing the initial Baofeng manual, as well as for orientation to the radio's keypad. Also for pointing out an easier method for installing the belt clip.
- All the folks on the Baofeng UV-5R Yahooogroup for hints on programming and use, as well as on getting around the radio's many little quirks.

- Jim Mayes, KC5QDM, and John Glass, NU6P, for the menu listings. Also, Jim for actually sending the modifications to this guide to include the menu listings.
- Mark Senk, WB3CAI, for the tip on turning off the light.
- Jim Unroe, KC9HI, for lots of corrections and clarifications.

Attaching the Belt Clip

The belt clip attaches to the back of the radio with two included Philips head screws, which will be screwed into the back of the radio, towards the top, just above the top of the battery pack.

- Remove the screws from the back of the radio. Put them into the holes on the sides of the hinged plate on the back of the belt clip. It might be easiest to do these one at a time, as the screws are fairly small.
- Line the screws in the belt clip up with the holes in the radio. Screw in one of the screws partially, so that the clip holds in place, then start the other. Tighten both once the belt clip is properly aligned.

Inserting the Battery

The battery attaches to the back of the radio, very like many other handheld radios and mobile phones.

- Place the radio facedown in front of you with the top of the radio (the side with the antenna connector and on/off/volume knob) facing away from you.
- The battery pack is rectangular, with a plastic tab at the top center of the pack. The back of the battery, toward the bottom edge, has three contacts for charging in the included drop-in charger.
- Line the top of the battery up with the bottom of the radio so that the top of the battery rests on top of the bottom edge of the radio, with the charging contacts facing up.
- Squeeze the belt clip open with one hand to make room for the battery.
- Slide the battery away from you, towards the top of the radio. You will feel the battery slide up the guides on the radio and then latch in place as the latch in the radio connects to the tab at the top of the battery.

Orientation

Stand the radio up with the keypad facing you. Naturally, the keypad will be the front of the radio, and we will discuss the radio in this orientation.

At the top of the radio, you'll find an SMA male antenna jack on the left and the on/off/volume knob on the right. Between these is a large LED light bulb. Behind the LED is the battery release latch. Push the release latch forward and slide the battery down to remove it.

The right side of the radio only has the loop for the wrist strap and the speaker/mic jacks. The speaker/mic jacks are located under a cover that swings open towards the back. Pull the front of the cover free with a thumbnail to open it and plug in either a speaker/mic or programming cable.

The left side of the radio has three buttons. From top to bottom, they are the FM radio key, the PTT key, and the Monitor key.

The FM radio key turns on the FM radio if pressed briefly. If this button is held, it will turn on a pretty annoying alarm siren.

The PTT button keys the radio.

The monitor button, if held, will open the squelch for as long as the button is held in. If it is pressed quickly, it turns on (or off) the LED light at the top of the radio. Unfortunately, both "On" and "Off" play the same tone, so there is no non visual way to know whether the light is on or not. To be sure the light is off, turn the radio off, then on again; the light defaults to being switched off.

The front of the radio is where we will focus most of our attention. At the top of the front panel is the LCD display. Directly below the display is one button at the left side of the front panel. This is the button that toggles between "Frequency mode" (VFO) and "Channel mode" (Memory channels) and is labeled "VFO/Mem". You will also find a generous speaker grille, with a hole right below the button for the microphone.

Below the speaker are two more buttons, one on the left side of the front panel and one on the right. The left button is the A/B button, which switches from the "A", or top display frequency or channel, to the "B", or bottom, frequency or channel. Since most programming functions can only be done from the "A" display, we won't do much with this button. Also, be aware that there is no audible indication as to whether you have switched to "A" or "B". The only way you'd know would be by trying to program a memory and having the memory not program.

The button on the right side of the display is the "Band" button. This determines whether you are entering VHF or UHF frequencies. This button has no effect at all in channel mode.

Below these two buttons is what looks like a traditional DTMF keypad, having four rows of four buttons each.

This keypad, however, isn't exactly traditional in its layout. The top four buttons are the "menu" button (used to open the settings menu), the "up" button, the "down" button, and the "Exit" button. In transmit, these buttons send A, C, B, and D DTMF tones, respectively. Below these, you will find (left to right, top to bottom): 1, 2, 3, and scan/reverse (which is also the star key); 4, 5, 6, 0; 7, 8, 9 lock (which sends pound).

Turning the Radio On

To turn the radio on, turn the power/volume knob to the right until it clicks on. You will hear two short beeps, followed by an announcement of the radio's mode. You will hear "Frequency mode" for VFO mode or "Channel mode" for memory mode. The first time you turn the radio on, it will be in "Frequency" mode with "dual" receive mode enabled.

In order to make using this radio a little easier, I recommend turning off the "Dual" receive option. Once turned off, this setting will be remembered permanently. It can always be turned back on if you want or need it.

Press "Menu". The radio will say "Menu".

Press "7", then press "Menu". The radio will say "Dual stand by". Yes, really. She's hard to understand sometimes, but that's what she's saying. [I understand the voice is much easier to understand in later versions. Early revisions of this radio had a very heavily accented female voice.]

Press "0", then press "Menu". The radio will say "Confirm".

Finally, press "Exit" to exit the menu.

I have been putting the "dual" in quotes, because it isn't really dual receive. It's more like dual watch, because audio from only one channel or the other is heard at any given time.

To further complicate the issue, there is an option to have the transmit follow whichever channel (A or B) opens the receiver. If this option is turned on, it may be difficult to know where exactly you are transmitting. On the whole, it's probably best to just turn the dual function off.

A Couple Other Initial Setup Tasks

There are a couple of options that are turned on by default that it's best to turn off. Having these on will make operating the radio annoying either to you or to the people you're talking to.

There are three settings for eliminating repeater tail tones or courtesy tones. It is not exactly clear what the differences are in these settings, but you want to turn them all off. There is also a "roger beep" setting that you also want to disable. These are menus 35, 36, 37, and 39. Set all of these entries to 0:

- • Press "Menu", "3", "5", "Menu", "0", "Menu".
- • Press "Menu", "3", "6", "Menu", "0", "Menu".
- • Press "Menu", "3", "7", "Menu", "0", "Menu".
- • Press "Menu", "3", "9", "Menu", "0", "Menu".

A Note About the Menu Key

When the Menu key is pressed, the radio will say "Menu". This key also functions as "Enter". Thus, after modifying a menu option, press the Menu key again to accept the change. The radio will say "Confirm" to acknowledge a change in a menu's parameters.

Also be aware that the menu will stay active for a good 10 seconds after changing a menu option. Thus, if you're changing several menu options in a row, it may not be necessary to press the menu key at the beginning of each operation. You'll know that the menu has exited if the radio beeps after a length of inactivity in the menu.

Changing Channels Or Frequency

You can set the frequency by using the up/down buttons or by entering the frequency or channel number directly. Note that the numbers speak when pressed. Enter six digits for frequency, i.e. 146520 or 444100, and three digits for the channel number, i.e. 001, 024, or 114.

For frequencies in a 6.25 KHz channel spacing, like 467.7125, enter six digits, such as 467.712. If you have the channel spacing (Menu 1) set to 6.25 KHz, the radio will set the channel correctly. For frequencies in a 2.5 KHz channel spacing, such as 154.5275 set the radio to 154.525 and, with a 2.5 KHz channel spacing (Menu 1, option 0) press the "Up" button once.

See the menu section below for a more complete discussion of setting menu parameters.

Programming Memories

You can program memories either with a standard split or with odd splits. Remember that once a memory is programmed, it cannot be changed, short of deleting it and starting over. Memories store receive and transmit frequencies, along with receive and transmit CTCSS or DCS codes, power level, and channel width (wide or narrow). Power level can be temporarily set to its other value, i.e. the one not stored in memory, by pressing the "Lock" key (the # key on the keypad) while in memory mode. The power level will revert to its stored value if you switch channels, press "Lock" again, or turn the radio off and then on again. Note that this trick to temporarily change power levels only works if TDR (dual watch, Menu 7, discussed earlier) is set to "Off".

Programming a repeater channel with standard offsets:

- 1.1 Choose the "A" frequency, printed on the top line of the display. This is probably already done, but if you go through all the steps to program and get a single beep upon the final press of

- "Menu", you are in the B VFO and need to press the "A/B" button. .
- 2.2 If you are in channel mode, press the channel/frequency button. Remember, channel mode will speak the channel number if you press the "up" or "down" button.
 - 3.3 Ensure you are on the correct band. If you enter a frequency and the radio says "Cancel" when you press the last digit, press the "Band" button to select the correct band.
 - 4.4 Enter the repeater output frequency, such as 147060.
 - 5.5 Press "Menu", "2", "6", "Menu". The radio will say "Offset frequency".
 - 6.6 For 2 meter repeaters, enter 00600. For 70 cm repeaters in the US or Canada, press 05000. This may be different in other parts of the world. Press "Menu" to confirm the offset amount. The radio will say "Confirm".
 - 7.7 Press "Menu", "2", "5", "Menu". The radio will beep but will say nothing. Remember that the first press of "Menu" may not be necessary if the menu has not exited.
 - 8.8 Press "1" for a plus (positive) offset, or "2" for a minus (Negative) offset, then press "Menu". The radio will say "Confirm".
 - 9.9 Set the CTCSS or DCS codes for transmit and receive, as appropriate. These are in menus 11 and 12 for CTCSS and DCS receive respectively, and menus 13 and 14 for CTCSS and DCS transmit. CTCSS tones can be entered directly; for instance, enter 885 for an 88.5 Hz tone, 1318 for a 131.8 tone, etc. See below for a list of DCS codes.
 10. 10 If the menu has exited, indicated by two very short bleeps, one higher followed by one slightly lower, press the Menu key to re-enter the menu. This should not be necessary often, as the menu stays up for close to 10 seconds before timing out.
 11. 11 While in the menu, press 2, 7, Menu. The radio will say "memory channel".
 12. 12 Enter a channel number from 000 to 127. However, be sure not to use a channel number that has already been programmed since the radio will not let you overwrite a stored memory. Programming over a channel with data in it will simply change that channel's transmit frequency. Once the channel number is entered, press "Menu" again. The radio will say "Receiving memory".
 13. 13 Press "Exit".
 14. 14 Press the "Scan/Rev" button. This will swap over the transmit and receive frequencies so that they are reversed. This is handy for listening to the repeater's input channel, in order to determine whether a station is in simplex range or not.
 15. 15 Press "Menu", "2", "7", "Menu". The radio will say "Memory channel".
 16. 16 Enter the same memory channel you entered above in step 12. Then press "Menu" again. The radio will say "Transmitting memory".
 17. 17 Press "exit". You've set up a repeater channel. You will find it in your list of program channels when you switch to channel mode.

Programming A Repeater With An Odd Split

Alternatively, you can specify your own transmit and receive frequencies. In brief, you would program in the receive frequency first, then program in the transmit frequency in the same way. This may be more reliable, since only the "A" display works for programming memories, thus, the radio can only remember one offset value for programming purposes. It does not store a separate offset for VHF and UHF either.

For this method, the offset value (memory 26) and offset direction (menu 25) don't matter at all.

To demonstrate, here is how you would program in the infamous 147.435 repeater in Los Angeles into memory 99. This repeater has an output frequency of 147.435 and an input frequency of 146.400, a decidedly very odd split. As there is no CTCSS tone, we won't worry with that in this example.

- 1.1 If in channel mode, press the VFO/Mem button to switch to Frequency Mode.

- 2.2 Press 1, 4, 7, 4, 3, 5.
- 3.3 To be thorough, be sure that no CTCSS or DCS tones are set from a previous operation. Set menus 10, 11, 12, and 13 to 000.
- 4.4 Press Menu, 2, 7, Menu. The radio will say "Channel Memory". Then, type 0, 9, 9, Menu. The radio will say "Receiving memory".
- 5.5 Press "cancel" to exit the menu.
- 6.6 Press 1, 4, 6, 4, 0, 0.
- 7.7 Press menu, 2, 7, menu. The radio will say "Channel memory".
- 8.8 Press 0, 9, 9, Menu. The radio will say "Transmit memory".
- 9.9 Press "Cancel".
10. 10 The odd split is now programmed.

Again, remember that you can use this same procedure to program standard offsets, too. As long as you know the repeater's input and output, you can program them separately if you wish, and not worry about the repeater offset menus.

Changing Between VFO And Memory Modes

You can switch easily between VFO ("Frequency") mode and memory ("Channel") mode by pressing the top most button on the front of the transceiver, labeled "VFO/Mem". The voice will tell you whether you are in "channel mode" or "Frequency mode". Channel mode must have at least one channel programmed; there are at least two programmed from the factory, probably more. Incidentally, it's probably a good idea to delete those channels and put your own data in them immediately. Deleting channels is done with menu 28.

A channel can be directly set by entering it's three digit number on the keypad, such as 005, 022, or 122 for channel 5, 22, or 122 respectively. The new channel number will be announced via a voice prompt.

Adjusting Menu Options

All menu options can be adjusted from the keypad. You can either scroll through the menu with the up/down buttons, or by directly selecting the menu option you want numerically. So that you can most easily keep track of where you are, I believe selecting options numerically is easiest, as there is, again, no audible indication of when the beginning or end of the menu is reached, and the menus wrap. Note that the menu begins with 0, not with 1. Menu 0 is the squelch adjustment.

As with selecting menus, the menu options can be adjusted numerically. For instance, selecting menu 2 (to adjust the power level), press 0 for high power or 1 for low power. For offset direction (menu 25), you can select 0 for no offset, 1 for a plus offset, or 2 for a minus offset. So, as menu options below are listed, the first option is always number 0, not number 1.

To adjust the menus, press the Menu key, which is the first key on the first row of the main keypad. You will hear "Menu", at which time you can then enter a menu number or press the up/down buttons. Once you reach the menu you want, press the Menu key again. In most, though not all cases, you will hear voice confirmation of the name of the menu item you have selected. In the cases where you do not hear a voice confirmation, you will just hear a beep. Adjust the parameter by pressing numbers or up/down arrows. Once the menu is set correctly, press the Menu key again. You will hear the word "Confirm" spoken to indicate that the option is set. You can then choose another menu item or press the "Exit" button to exit the menu. If you do nothing for about 10 seconds, the menu will exit automatically. In either case, you will hear a tone to confirm you are no longer in the menu system.

List of UV-5R Menus

- 0, SQL, squelch level: 0-9
- 1, STEP, frequency step: 0 2.5, 1 5, 2 6.25, 3 10, 4 12.5, 5 25
- 2, TXP, transmit power: 0 high, 1 low
- 3, SAVE, battery save: 0 off, 1 1:1, 2 1:2, 3 1:3, 4 1:4
- 4, VOX: 0 off, 1-10
- 5, WN, wideband/narrowband: 0 wide, 1 narrow
- 6, ABR, display illumination: 0 off, 1, 2, 3, 4, 5 seconds
- 7, TDR, dual watch reception: 0 off, 1 on
- 8, BEEP, keypad beep: 0 off, 1 on
- 9, TOT, transmission timer: 0 15, 1 30, 2 45, 3 60, ... 585 and 600 seconds in 15-second increments
- 10, R-DCS, reception digital coded squelch
- 11, R-CTCS, reception continuous tone coded squelch
- 12, T-DCS, transmission digital coded squelch
- 13, T-CTCS, transmission continuous tone coded squelch
- 14, VOICE, voice prompt: 0 off, 1 on (older versions), 0 off, 1 English, 2 Chinese (Newer versions)
- 15, ANI-ID, automatic number identification of the radio: can only be set by pc software
- 16, DTMFST, dtmf tone of transmitting code: 0 off, 1 dt-st, 2 ani-st, 3 dt+ani
- 17, S-CODE, signal code: only could be set by pc software
- 18, SC-REV, scan resume method: 0 TO, 1 CO, 2 SE
- 19, PTT-ID, push to talk id: 0 off, 1 bot, 2 eot, 3 both
- 20, PTT-LT, delay the signal code sending, 0-30 ms
- 21, MDF-A, (under channel mode the channel displays): 0 frequency, 1 channel number, 2 name (name is only programmable via programming software)
- 22, MDF-B, same as menu 21, for b band
- 23, BCL, busy channel lockout: 0 off, 1 on. [Note: This doesn't lock out a channel from memory scan. It prevents transmitting on a busy channel and is programmed on a per channel basis.]
- 24, AUTOLK, keypad locked automatically: 0 off, 1 on
- 25, SFT-D, direction of frequency shift: 0 off, 1 plus, 2 minus
- 26, OFFSET, frequency shift: 0-69.990 mhz
- 27, MEM-CH, store memory channels: 000-127
- 28, DEL-CH, delete memory channel: 000-127
- 29, WT-LED, illumination display color of stand by: 0 off, 1 blue, 2 orange, 3 purple
- 30, RX-LED, illumination display color of reception: 0 off, 1 blue, 2 orange, 3 purple
- 31, TX-LED, illumination display color of transmission: 0 off, 1 blue, 2 orange, 3 purple
- 32, AL-MOD, alarm mode: 0 site, 1 tone, 2 code
- 33, BAND, band selection: 0 vhf, 1 uhf
- 34, TDR-AB, transmitt+ selection while in dual watch/reception: 0 off, 1 a, 2 b
- 35, STE, tail tone elimination: 0 off; 1 on
- 36, RP-STE, tail tone elimination in communication through repeater: 0 off; 1-10
- 37, RPT-RL, delay of tail tone of repeater: 0 off; 1-10
- 38, PONMSG, boot display: 0 full; 1 mgs
- 39, ROGER, tone end of transmission: 0 off; 1 on

40, RESET, restore to default setting: 0 VFO; 1 all

DCS
WITH ASSOCIATED KEYPAD NUMBERS

000: Off	001: D023N	002: D025N	003: D026N	004: D031N
005: D032N	006: D036N	007: D043N	008: D047N	009: D051N
010: D053N	011: D054N	012: D065N	013: D071N	014: D072N
015: D073N	016: D074N	017: D114N	018: D115N	019: D116N
020: D122N	021: D125N	022: D131N	023: D132N	024: D134N
025: D143N	026: D145N	027: D152N	028: D155N	029: D156N
030: D162N	031: D165N	032: D172N	033: D174N	034: D208N
035: D212N	036: D223N	037: D225N	038: D226N	039: D243N
040: D244N	041: D245N	042: D246N	043: D252N	044: D252N
045: D255N	046: D261N	047: D263N	048: D265N	049: D266N
050: D271N	051: D274N	052: D306N	053: D311N	054: D315N
055: D325N	056: D331N	057: D332N	058: D343N	059: D346N
060: D351N	061: D356N	062: D364N	063: D365N	064: D371N
065: D411N	066: D412N	067: D413N	068: D423N	069: D431N
070: D432N	071: D445N	072: D446N	073: D452N	074: D454N
075: D455N	076: D462N	077: D464N	078: D465N	079: D466N
080: D503N	081: D506N	082: D516N	083: D523N	084: D526N
085: D532N	086: D546N	087: D565N	088: D606N	089: D612N
090: D624N	091: D627N	092: D631N	093: D632N	094: D645N
095: D654N	096: D662N	097: D664N	098: D703B	099: D712N
100: D723N	101: D731N	102: D732N	103: D734N	104: D743N
105: D754N				