

## Thoughts on the Radioddity DB25-D DMR Mini-Mobile Transceiver

W9YA – 31-July-21

### - - - **BOTTOM LINE:**

This radio's software and firmware works as a Commercial Radio. It lacks features that Ham Radio operators use like TA (Talker Alias), dual/simultaneous TS (Time Slot) receive, the ability to open the squelch when in DMR (Digital Mobile Radio) mode, and even simple things like the display of zone names.

Some features that are available, and would be used often by Ham Radio Operators, are not "mobile-ready" because they are buried several layers down in the menuing instead of being offered as P-BUTTON (programmable buttons, there are 7) options.

Other features are not fully implemented like the GPS-synced time clock, that cannot be corrected for DST (Daylight Savings Time).

Sadly there are other features that are NOT reliable like failing to display results from the Ham Radio User-ID Database during reception.

Even simple DMR audio decoding in the receiver isn't as it should be when enabling Promiscuous-mode (Reception of any TG (Talk Group)). In a side-by-side comparisons with several other DMR radios it recovers audio too slowly and often chops off the beginning of received transmissions that other radios have no issues with. (NOTE: Promiscuous-reception MUST be enabled every time you turn on the radio !!! If you set any channels RX-Group to "none", and enable Promiscuous-mode-reception, the radio does seem to decode faster. BUT, you then must remember to turn on Promiscuous-mode or the radio hears NOTHING !)

While it does get good transmit audio reports from users, the radio suffers from an inability to assign the receive audio level adjustment to the front panel encoder, which is the only front panel knob. Rapid access to too loud and too weak audio would seem to be paramount for safety reasons in a radio sold for mobile application.

For a complete list of these missing, incorrect, and inconsistent/unreliable features (and there are MANY more than those above) read on. THEN go to "IN CLOSING" for my recommendations.

### - - - **PREAMBLE:**

I have somehow managed to own and operate many 2-Way (Digital and Analog) Radios over the last half-century. Some delightful as well as some that have little to no chance of amounting to anything useful. I am often asked to convey my opinions, and I have had the opportunity to present my thoughts at hamfests and seminars in the past. Unfortunately due to the present environment, an in-person presentation isn't possible. So here are my thoughts in writing.

My most recent Ham Radio purchase is a mixed bag. The Radioddity DB25-D 2-Way DMR transceiver COULD BE something special that captures a surprising amount of the ham radio DMR mobile

market. The potential, which is to say the hardware, is clearly evident. Unfortunately the code-plug-software (CPS) and the firmware in the radio itself have too many issues. They exhibit a severe lack of important features, too many inconsistencies, and some incorrect behavior that are, without a doubt, this radio's Achille's heal.

\*\*\* More to the point; these problems could be FIXED while retaining the hardware and turn this radio into a market leader. All without needing to patch the commercial user based software base.

Is this "pie-in-the-sky" nonsense or can this be done? .....

Well, there is an example of this being accomplished in the recent openGD77 software project. It REPLACES the software and firmware that shipped with the radio. When loaded into the Radioddity GD-77 Hand-Held 2-Way Transceiver's hardware base, these replacements represents the pinnacle of a fast, simple, and an easy-to-use feature set for Ham Radio users/operators.

Please don't take my word for this, at the end of this review are some examples of feedback/reviews from the users. (**APPENDIX A**)

### - - - REVIEW - PART 1:

Before I go into a listing of the problems/issues I found in the DB25-D, I want to outline what the user should be able to do with **single button pushes**;

- Users must be able to press one button when the radio is receiving and thereby assign future transmissions to the TG (Talk Group) being received. This is paramount to interacting with other users on a repeater connected to the Brandmeister network. (Which carries approximately 80 percent of all the HAM RADIO DMR traffic.) \*\*\*\*\* The mobile operator should NOT be required to either look at a screen or go through a maze of menuing to accomplish this task. More especially since this is something the radio already knows about. There simply is NO GOOD REASON this information cannot be so moved into the working registers that control the radio's behavior.
- Users must be able to hit another button to IMMEDIATELY enter in a TG assignment when the receiver is idle. And as above, it remains until another channel is selected.
- A long press on this second button should make any changes made to the current channel permanent (including those changes made above with button number one). \*\*\*\*\* Being able to easily select amongst the thousands of talk groups available with the least number of button pushing or knobs to turn is paramount when using the Brandmeister Network ( or ANY network) while driving.
- A long press on the first button should place the radio into wide-band FM mode and open the squelch, so the ham radio user can comply with licensing requirements and thereby not initiate any interference as well as note any on-frequency Interference that might be happening.
- Finally, the volume control must be instantaneous, which is to say it should be the default behavior of the encoder and NOT subject ANY button pushing.

\*\*\*\*\* Again; ANY extra button pushing for something that could/should be accomplished in the simplest manner while being MOBILE. This is something I feel to be of the utmost concern.

(The aforementioned openGD77 project's user guide is an EXCELLENT way to discover these and other simple user interface examples. A link to this is in **APPENDIX B**.)

### - - - REVIEW - PART 2:

Here's the most important **missing features** IMnsHO:

- Talker Alias (TA) should be fully incorporated with the ability to separately enable TX (Transmit) and RX (Receive) TA.

- Further the radio should allow to user to select TA, Contact-list (CT), and Ham-ID-Database (HDB) in any order for lookup and display the user-data of the sending station being received. (i.e. As the first, second, and third for choices to find a match and then display the results.) The aforementioned Brandmeister network transmits TA automatically for ALL transmissions within the neand would be a perfect choice for the first (primary) "lookup-and-display". \*\*\*\* The radio should be able to do this since it requires NO wasted cycles on database lookups and NO need for the end user to load newer databases !!!! (See **APPENDIX B** for an example of how this is done in another Radioddity radio, the GD77, when using replacement software.)

- There is no easy way to get to a "Last Heard" list, which is a visual-display of the last heard station's user-data. This display should include WHOM, WHEN, WHAT TG. Responding to a reception on a Brandmeister repeater is not possible without knowing the above information, as the user will have NO IDEA what TG was received amongst the 1000's that are available. This also should be accomplished with a quick, one-button solution. (\*\*\*\*\* The radio also does NOT directly display the received TG either, so even IF the mobile operator happened to glance at the radio during reception, there would be NO WAY to discern which TG was being used.)

### - - - REVIEW - PART 3:

And as I promised above; Here's the list of what I found to be **inconsistent, wrong, and/or missing behavior with the current firmware/cps system**. They are listed in the order I wrote them down with NO attempt to prioritize them:

- Very slow decode of audio and resulting decoded-screen-into (database) compared to other radios. This can result to as much as .5 secs of audio being lost. This is based on testing along-side other radios like the TYT MD-380 and 390, Radioddity GD-77 (openGD77 software), as well as data collected using Anytone radios.

- The radio has randomly reset/reboot itself during use. There appears to be no pattern to this.

- Also noted: NO transmission/slot-sync while indicating that the radio is synced and transmitting audio.

- The user should be able to easily select fan-on to avoid overheating the radio.

- The user should be able to select whether band/display A or B has priority for receive. \*\* Currently noisy analog or choppy digital reception makes the dual-mode a nightmare when it switches back and forth. As such; the user cannot determine, without taking their eyes off of “the-road”, whether the radio will be transmitting on “band A” or “band B”. (\*\*\*\* This is a complete waste of the “Second” receiver in this radio....sigh.)
- When the user selects to run this in “single-band-mode”, to avoid the above issue, the display should enlarge itself (if possible). Currently it leaves half the display blank.
- The radio has a very noticeable difference in recovered audio level between analog and digital modes. This could be corrected with master offset/pre-leveling for each mode.
- The audio is almost always (generally) much too loud. With the above mentioned pre-leveling the user can better use the range of the audio control. \*\*\* And as mentioned in a earlier part of this review, the audio control should be defaulted to the encoder knob, with the user able to easily change the default, while allowing the encoder to be used for changing options/features in the menu system.
- The GPS-based clock sync does not take into account DST. There should be an offset setting to allow for this at the very least.
- The Channel Scanning feature very slow compared to many other DMR radios.
- Promiscuous DMR reception MUST BE selectable as the default for Ham Radio operation.
- Enabling both RX-Lists and Promiscuous noticeably slows down recovering the DMR receive audio.
- Promiscuous receive MUST be sticky (once set it needs to be un-set, even if the radio is powered off once set). \*\*\*\*\* Setting the RX-List to “none” means NO reception unless Promiscuous is also enabled each time the radio is turned on.
- \*\*\*\* Plus RX-lists MUST serve for both a TX and an RX-list (i.e. a TG-List) as default behavior. (Selecting the TG should make that selection for BOTH TX and RX !!)
- As already mentioned in another part of this review, but this deserves to be re-stated; The user should be able to manipulate TG-lists from the top level (button assignments).
- As outlined elsewhere, the various “group-hang-time” settings must allow for setting to “no-limit” , that is until the user interacts to change the TG setting; like changing the channel.
- The Ham User-ID Database takes 7 times TOO LONG to load. Currently it takes approximately 70 minutes to load to 2/3rds capacity.
- The radio can “loose” the Ham User-ID Database. This has happened to me, although I have no idea how to recreate this behavior.
- There is inconsistent behavior when long pressing the Encoder’s press-switch. This inconsistency has been noted with b/e button and several of the “P” buttons.

- The backlight's behavior should be both a part of the menus and the button assignments, \*\*\* including on-time.
- It seems both the Record-received-audio's memory and the DMR User-ID Database's memory share space/indexing. If I had not suspected this, I would not have been able to update the database after starting a recording !! (i.e. I had to erase first.)
- There is no reliable way to add channels apart from zoning.
- Nor is there a simple way to add a new channel.
- The user cannot switch between "bands A and B" when the radio is receiving. PLUS:
- Receiver "activation" (reception of a signal) interrupts and defeats settings in progress. \*\*\*\* Although this was alluded to earlier in the review, this may well be the most annoying issue in the operation of the radio, as you are NOT simply paused during receive, the menu resets and effective makes the user start anew at whatever task was being attempted.
- In my testing the radio transmitted on TG 19200, which is nothing I have ever programmed or entered into the settings.
- Zones are displayed ONLY as numbers on the display, whereas they have names in the codeplug. The mobile operator should NOT be faced with "decoding" these numbers when the display should be able to use the names.
- The Ham User-ID Database is not always consistently displayed on receive. Numbers are often displayed instead, and these are NOT the user-id number.
- User should be able to disable TS and CC "filtering" as needed/wanted. Filtering status should be part of the display, as well as being "sticky".

- - - **IN CLOSING:**

Had enough ?, me too !! - This radio simply does NOT serve well as a Ham's DMR radio. And it serves poorly on the more user-adaptable networks such as the Brandmeister network. \*\*\* Here's to hoping Radioddity/Retivis/Kydera can manage to "fix stuff" with the DB25-D/RT73/DR300UV 2-Way Mini-Mobile Radio.....

**Until then my recommendation is to NOT saddle yourself with this radio.**

Um, in case anyone from Radioddity/Retivis/Kydera is still reading this;

One useful (and perhaps the "best") way to get market share with a competitive and easy-to-use mobile DMR radio is to have TWO firmware loads along with TWO selectable entry modes for the CPS (Code Plug Software), one for Ham DMR Operators/Users and the other being what is currently available for

the Commerical DMR Users. This way the Ham Radio Operator/User is not saddled with a system suited to limited a small number of TG assignments, and limited in-the-field adapatablity. While it would be nice to think the current situation can be “patched”, I am not convinced this will work out as well for the end user.

I also doubt the marketing of this radio will be successful without a complete re-write either and for a variety of reasons that I am not going to go into at the current time. Maybe we can explore this in the future, but my testing and work on this has now come to an end unless, and until, the marketers are ready to engage with their own efforts v/v the software and firmware. i.e. This situation is very much in “their court”.

(AND, now you know why I mentioned the openGD77 project earlier, the basic coding methods and the coding results say that a complete re-write can be done....it HAS been done...and the results of replacing software can make for an outstanding and successful product when the hardware is robust enough to be useful.)

es vy 73 om’s de Bob W9YA

#### **APPENDIX A:**

N4CAX writes;

“I’d like to thank the developers for this. It has made the gd77 an actual pleasure to program and use.”

Or this from AA0NI;

“Not a native Okie but been here nearly twenty years. Generally play with QRP/CW and WSPR..And for voice I hang out on DMR (more listening than anything). The GD-77 is probably the fifth different DMR radio I’ve owned. And the firmware you have all put together makes it shine head and shoulders over my TYTs (380 and UV380), GD-73, and original CS-800. I’ve since read that financial donations aren’t allowed... But I would have easily dropped \$20 in the plate for your efforts.”

Or this from M1DYP;

“all I can say is **AWESOME**, thank you very much....”

And this from IK0NWG;

“ you are my favorite heroes !!! THANK YOU

Ciao

Sal”

#### **APPENDIX B:**

Here’s the link to the openGD77 user’s guide (manual). It demonstrates what is possible today for a ham-based DMR radio:

[https://github.com/LibreDMR/OpenGD77\\_UserGuide](https://github.com/LibreDMR/OpenGD77_UserGuide)