

SharkRF OpenSPOT3 Mobile Hotspot

BARC Tech Night Presentation

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BLUF – Bottom Line Up Front



- Price: € 249 + € 24 Shipping (or approx. \$322)
- Where to buy: Directly from SharkRF, <https://shop.sharkrf.com/product/openspot3/>
- Executive Summary: Although the most expensive hotspot the openSPOT3 features: built in Li-ion battery, hardware transcoding for cross mode operations, built in WiFi & Radio antenna, web based setup and interface, call audio on web interface. Cross modes include:
 - DMR to D-STAR, C4FM & NXDN
 - D-STAR to DMR, C4FM & NXDN
 - C4FM to DMR, D-STAR, NXDN & P25
 - NXDN to DMR, C4FM, & D-STAR
 - P25 to C4FM





Size, Weight & Power

- Dimensions: 100 x 58 x 18.5 mm (3.94 x 2.28 x 0.73 in)
- Weight: 77 grams (2.72 oz)
- Operating temperature range:
 - During battery charge: 0 - +45 °C
 - During normal operation: -20 - +60 °C
- Battery: Polymer Lithium-Ion 1200 mAh
- Power supply: 5 V DC through the USB-C port
- Power consumption: max. 800 mA @ 5 V (4 W)
- UHF modem:
 - RF power output: max. 13 dBm (20 mW)
 - Receive/transmit frequency range: 421-458 MHz
 - Receiver sensitivity:
 - Gaussian 2FSK: -114 dBm @ 9.6 kbps
 - Raised Cosine 4FSK: -109 dBm @ 9.6 kbps

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Demonstration



- Description of UI (Computer & phone app)
- Setup (WiFi connection, frequency, power, DMR ID, etc)
- Example of setting up BrandMeister DMR
- Description of cross-mode capability
 - Example, DMR to D-STAR
- Profile Descriptions
- APRS
- Connecting to other non-Brandmeister servers (i.e. HBLink demo)

User Interface (Web based, cross platform)

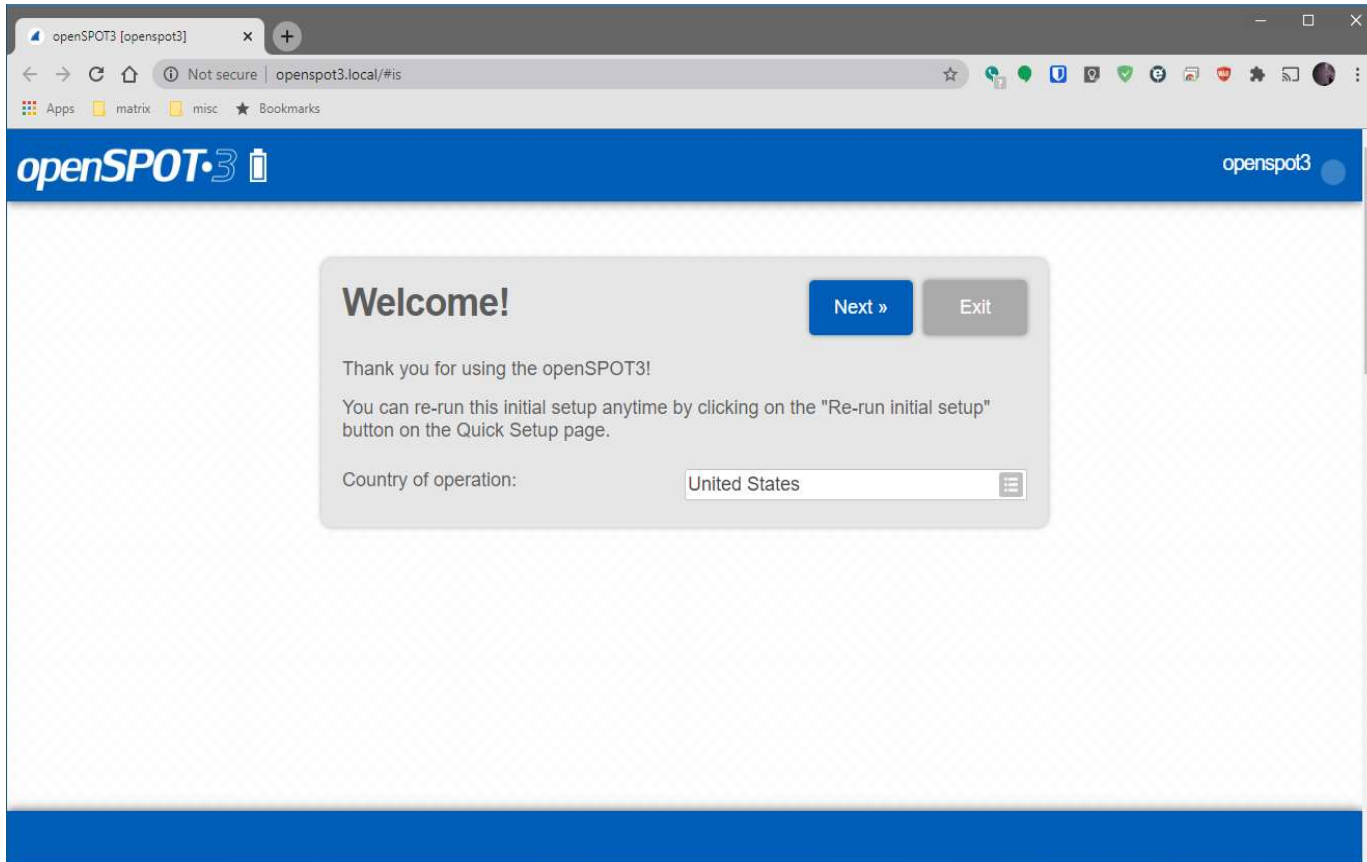


Web Browser Interface

Phone Browser Interface

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Setup – Welcome Screen

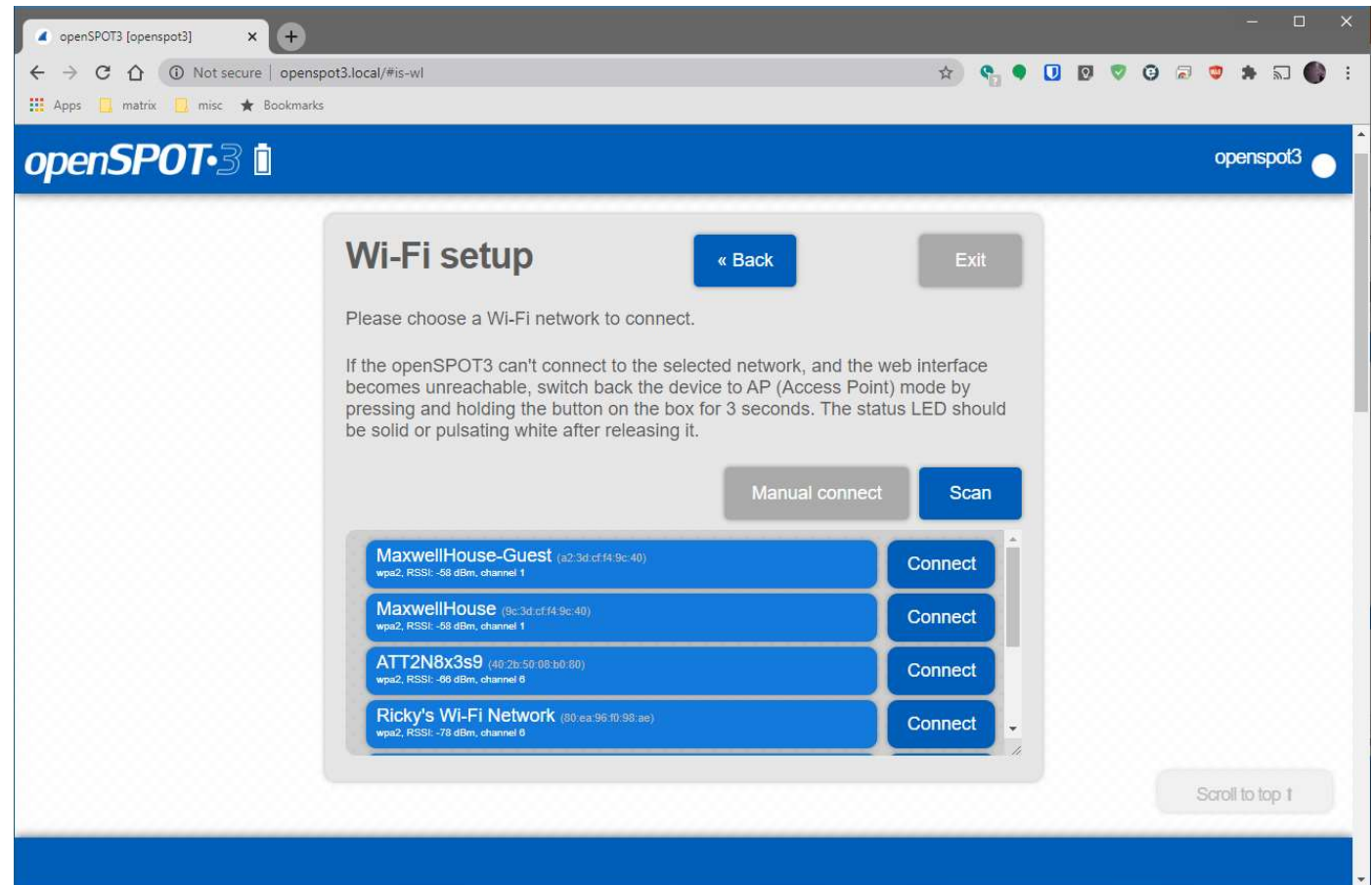


- Connect to OpenSPOT3 web access point (AP) via <http://192.168.99.1>



Setup – Wi-Fi Setup Screen

- Once connected to Wi-Fi network, browser will automatically point to configuration web page: <http://openspot3.local/>
- openSPOT3 connects to 2.4 GHz, but not 5 GHz.



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Setup – Callsign entry



- Entry of Callsign
- Automatic population of DMR ID & NXDN ID.
- Can choose light or dark interface mode here or later.

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Setup – Radio Type



- Select your radio type... for the remainder of this example we will select DMR

openSPOT3 [openspot3] x +

Not secure | openspot3.local/#qs

Apps matrix misc Bookmarks

openSPOT3 Status Connectors Modem Settings Network openspot3

Quick setup

User manual

SharkRF Link

POCSAG/DAPNET

ID database lookup

Upgrade ★

Quick setup Cancel

Please select the type of your radio.

DMR D-STAR

C4FM NXDN

P25 POCSAG

Do you want to set up location broadcasting and forwarding GPS position data from your transceiver to the APRS network?

APRS

Profile: 1 (default) Special connector is active Advanced mode Quick setup

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Setup – DMR Frequency & Network



- RF Frequency entry (I use a frequency in the “Shared by auxiliary and control links, repeaters and simplex (local option)” section of the 70cm band plan, 445.00 – 447.00)
- Here you may choose a network. I will choose BrandMeister, but you may choose any other cross mode network if desired.

Setup – DMR/BrandMeister Network



- Connect to BrandMeister Network, Callsign, DMR ID and password.
- Note: default password is “passwOrd” however (in my case) you may enter a different password if setup on the BrandMeister network.

The screenshot shows the openSPOT3 web interface. The main navigation bar includes 'Status', 'Connectors', 'Modem', 'Settings', and 'Network'. The 'Quick setup' dialog is open, displaying the following fields:

- Server: United States/3101
- Callsign: WB8AM
- DMR ID: 3139639
- Server password: (hide) passwOrd
- Link this talkgroup: Click here to select
- (set to 0 if not needed) 0

A blue 'Connect' button is located at the bottom of the dialog. The background interface shows a 'Quick setup' button, a 'User manual' link, and a 'SharkRF Link' button on the left, and 'POCSAG/DAPNET', 'ID database lookup', and 'Upgrade' buttons on the right. The bottom status bar indicates 'Special connector is active' and 'Advanced mode'.

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Setup – Complete!



The screenshot displays the openSPOT3 web interface. The browser address bar shows 'opensepot3.local/#status'. The navigation bar includes 'Status', 'Connectors', 'Modem', 'Settings', and 'Network'. The main content area features a 'Status' section with buttons for 'Fullscreen', 'Clear call log', and 'Export call log'. Below this, there are two call log entries:

- To: 91, From: 3143172, Group DMR voice call from net, End: 14:54:56 (00:00.5s 80% L0%)
- To: 9, From: Announcement (9998), DMR voice announcement, End: 14:55:05 (00:13.5s L0%)

Below the call logs, the status is shown as 'connected'. A volume slider is visible. The system information section includes:

- Background conn. status: DAPNET | APRS
- Active config profile: 1 (default)
- Active connector: Homebrew/MMDVM
- Modem mode: DMR
- Modem RX/TX frequency, power: 445.600000/445.600000 100%
- Server address: 107.191.99.14
- Server type: primary
- Homebrew call rerouting: not active
- BrandMeister linked static TGs: 3139, 310557
- BrandMeister linked dynamic TGs: -
- BrandMeister linked reflector: -
- BrandMeister server: status list active groups last heard

The bottom of the interface shows 'Profile: 1 (default)', 'Connected', 'Advanced mode', and 'Quick setup' buttons.

- Setup Complete!
- Note callsign database is updating in the background.

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Cross Mode – DMR to D-STAR



- Step 1: Edit connector to desired mode, click on “Switch to Selected”.
- Step 2: Keep “Modem mode” on DMR, and then choose D-STAR REF or Gateway. Click on “Save”.
- Use DMR TG 9 (programmable) to use D-STAR
- Change reflector/GW via web interface

The screenshot displays the openSPOT3 web interface. The browser address bar shows the URL 192.168.1.25/#connectors. The interface has a dark theme with a top navigation bar containing 'Status', 'Connectors', 'Modem', 'Settings', and 'Network'. The 'Connectors' section is active, showing the current connector as 'Homebrew/MMDVM' and the selected connector as 'REF/XRF (DPlus/DExtra)'. A 'Switch to selected' button is present. Below this, the 'D-STAR/REF/XRF (DPlus/DExtra)' configuration panel is expanded, showing a 'Save' button and several input fields: 'Modem frequency (MHz)' (445.600000), 'Modem mode' (DMR), 'Mode' (Reflector selected), 'Server' (REF053), 'Module' (C), and 'Callsign' (WB8AM). A 'Check D-STAR registration' button is at the bottom of this panel. On the right side, there is a vertical menu with options like 'Quick call', 'BrandMeister manager', 'APRS chat', 'DMR SMS chat', 'POCSAG/DAPNET', 'ID database lookup', and 'Upgrade'. The bottom of the interface shows 'Profile: 1 (default)', 'Modem transmitting' status, and 'Advanced mode' with a 'Quick setup' button.

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Cross Mode – DMR to D-STAR



The screenshot shows the openSPOT3 web interface in a browser window. The address bar shows '192.168.1.25/#status'. The interface has a dark theme with a top navigation bar containing 'Status', 'Connectors', 'Modem', 'Settings', and 'Network'. On the left, there are buttons for 'Quick setup', 'User manual', and 'SharkRF Link'. The main content area is titled 'Status' and includes buttons for 'Fullscreen', 'Clear call log', and 'Export call log'. The call log shows three entries, all from 'WA7ERY/FRED' to 'CQ CQ CQ'. The first entry is from 'WA7ERY/FRED' (ID: 3105193) sent as a DMR group call to 'dst 9 src 3105193' at 15:23:48. The second entry is from 'KB90MH/JIM' (ID: 3117681) sent as a DMR group call to 'dst 9 src 3117681' at 15:23:34. The third entry is from 'WA7ERY/FRED' (ID: 3105193) sent as a DMR group call to 'dst 9 src 3105193' at 15:23:21. Below the call log, the status is 'connected' with a blue indicator. System information includes: Background conn. status: DAPNET | APRS; Active config profile: 1 (default); Active connector: REF/XRF (DPlus/DExtra); Modem mode: DMR; Modem RX/TX frequency, power: 445.600000/445.600000 1%; Server address: ref053.dstargateway.org; Connected to: REF053/C. The 'openSPOT3 info' section shows 'Battery: charge done' at 100% and 'Hardware version: 1.0'. At the bottom, it shows 'Profile: 1 (default)', 'Connected', 'Advanced mode', and 'Quick setup'.

- Traffic from D-STAR REF053 C to DMR TG 9

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Profiles – DMR to ?



- Change to different profile modes (5 available slots) on the fly with the radio.
- Example: Change from profile 1 (DMR) to profile 2 (D-STAR) by calling TG 9002

The screenshot displays the openSPOT3 web interface. The browser address bar shows 'Not secure | 192.168.1.25/#settings'. The interface has a dark theme with a top navigation bar containing 'Status', 'Connectors', 'Modem', 'Settings', and 'Network'. The 'Settings' tab is active. On the left, there are buttons for 'Quick setup', 'User manual', and 'SharkRF Link'. The main content area is titled 'Configuration profile' and includes three sections: 'Change active profile' (with a dropdown set to '1 (dmr)' and a 'Change' button), 'Change profile on timeout' (with a '0' second timeout, radio buttons for 'Modem' and 'Modem or network', and a 'Change to profile slot:' dropdown), and 'Profile names' (with input fields for 'Profile #1: dmr' and 'Profile #2: dstar', and a 'Save' button). On the right, there is a vertical sidebar with buttons for 'Quick call', 'BrandMeister manager', 'APRS chat', 'DMR SMS chat', 'POCSAG/DAPNET', 'ID database lookup', and 'Upgrade'. At the bottom, a status bar shows 'Profile: 1 (dmr)', 'Connected', 'Advanced mode' (checked), and a 'Quick setup' button.

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Profiles D-STAR to ?



- Similar situation for going from D-STAR (etc) to any of the other 5 profiles.



Hotspot Voice Announcements

- Calling (example is DMR) talkgroups 9995 – 9998 to hear configuration settings over voice announcements.
- Example, call TG 9995 to hear current time.

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APRS Chat



- Has built-in ability to perform APRS (& DMR SMS) chat.
- APRS message to WXBOT shown!

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Summary



- Personal Experience vs. other hotspots
 - First hotspot was a DV4mini USB dongle
 - Next was PiZero + MMDVM combo
 - Moved to a DVMega & Bluestack (Bluetooth control)
 - Finally the OpenSPOT v2. and v3.
- Of all other hotspots, I've found the OpenSPOT to have the best performance and ease of setup.
- Travel is easy with the OS3 with either Mobile Hotspot or other network (i.e. guest network)

Questions



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