

Yaesu FT-991 MAIN V03-01

Combined HF/6 m + VHF/UHF Full TX Unlock - Flash and Rollback Guide

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This guide accompanies the experimental combined MAIN firmware for the **Yaesu FT-991**. This file set is for the original FT-991 only; do not use it on an FT-991A.

The modified image bypasses two conditional branches so the radio uses Yaesu's own built-in expanded transmit-range objects. It does not rewrite the frequency tables, PA calibration tables, ALC tables, TX-gain tables, DSP image, or RF routing tables.

Flashing modified firmware carries risk. Back up or write down memories and menu settings first. Use a stable DC supply and do not interrupt power or USB during the write. Initial RF checks should be made at low power into a properly rated 50-ohm dummy load. Transmit only where authorized.

What this build changes

0x2854A	47 1A -> 00 00	HF / 6-meter expanded-TX gate
0x2855C	47 08 -> 00 00	VHF / UHF expanded-TX gate

Built-in expanded transmit ranges selected by those paths:

- **HF / 6 m:** 1.800000-29.999999 MHz and 50.000000-53.999999 MHz
- **VHF / UHF:** 137.000000-163.999999 MHz and 420.000000-469.999999 MHz

Modified MAIN file	CUSTOM/AH057_V0301.SFL
Stock rollback	STOCK_ROLLBACK/AH057_V0301.SFL
Yaesu updater	YFSW021.exe
Official manual	FT-991_Firmware_Ver_Up_Manual_ENG_1612-D.pdf

Flash the combined unlock

These steps apply only to the MAIN firmware. The included original Yaesu manual remains the authoritative reference for the normal updater sequence.

1. Confirm the radio is powered off. Disconnect the DC cable and other cables from the transceiver.
2. Install the Yaesu virtual COM-port driver before connecting the USB cable. Connect the radio USB port to the PC with a standard USB A-B cable.
3. With the external power supply OFF, reconnect the DC cable.
4. Press and hold **TXW + SPLIT** on the radio front panel, then switch ON the external power supply. Do not press the radio POWER switch. The display should remain blank; this is MAIN program mode.
5. Run **YFSW021.exe**. Click Configure and select the radio's **Enhanced COM port**.
6. Click Browse and select **CUSTOM/AH057_V0301.SFL**. Double-check that the model and file name match this guide before continuing.
7. Click WRITE and leave the radio, USB cable, and DC power undisturbed until the updater reports completion / OK.
8. Click OK, turn OFF the external power supply, and disconnect the USB cable.
9. Turn the external power supply back ON.
10. Perform the MAIN firmware reset: press and hold **F(M-LIST)** while pressing and holding **POWER** to turn the radio on.
11. After the radio starts, power it off normally and then power it on again. Re-enter any memories or settings cleared by the reset.

First RF checks

- Verify normal receive and normal amateur-band transmit first.
- Verify fan, ALC, indicated power, and basic controls behave normally.
- Test newly enabled ranges at low power into a suitable dummy load before attempting higher power.
- Do not assume filtering, matching, spectral purity, or output power is identical at every software-enabled frequency.

Rollback to untouched stock MAIN firmware

If the radio behaves unexpectedly, use the exact factory MAIN image included in the STOCK_ROLLBACK folder.

1. Power the radio down and enter MAIN program mode again using TXW + SPLIT while switching on the external DC supply.
2. Run YFSW021.exe, select the Enhanced COM port, and browse to **STOCK_ROLLBACK/AH057_V0301.SFL**.
3. Click WRITE and allow the update to finish without interruption.
4. Turn the external supply off, disconnect USB, turn the supply back on, and perform the same F(M-LIST) + POWER reset.

Build verification

Stock SFL SHA-256	a09bc11aa532aa58201431896e1259b15e0601fb2b89686bf34c987c7dcad16e
Custom SFL SHA-256	0c7df8cb2f67d88fa6ad8d5fbc5c69c8a28f63d68b4d5b28540506011db67de6
Custom BIN SHA-256	88ac6ed2ee5ee3521eef0785649c9c164b15ee8a13a9f6801e0c512145a451a2
Decoded checksum	Stock 056CE516 / Custom 056CE466
Decoded differences	Exactly four bytes - the two conditional branch pairs listed on page 1.

Verification performed

- Exact known stock SFL hash verified before patching.
- Expected original bytes at both patch sites verified before modification.
- Stock SFL decode/re-encode round-trip matched the original byte-for-byte.
- Custom SFL decoded back to the exact intended patched firmware image.
- Motorola S-record byte counts and checksums validated.
- No decoded firmware bytes outside the four patch bytes differ from stock.

Keep both this guide and the original Yaesu firmware-update manual with the package. The original manual includes Yaesu's illustrations and full updater documentation.