

Yaesu FT-991 DSP V01-11

Experimental New-Generation DNR Constants - Flash, Test, and Rollback Guide

IMPORTANT: This is experimental, independently modified DSP firmware. It is not authorized by Yaesu and is for the **Yaesu FT-991 only**. Do not flash it to the FT-991A. Keep the stock rollback image intact. Use a stable DC supply and do not interrupt power or USB while writing firmware.

What this build changes

This build changes exactly 12 IEEE-754 floating-point constants in the two confirmed DNR parameter banks. No executable DSP code, entry point, section address, image size, MAIN firmware, transmit-range logic, or RF calibration data is changed. The complete 15-selection comparison showed that DNR selections 9-15 already match the newer Yaesu parameter pattern; only the values affecting selections 1-8 require changes.

Item	Value
DNR bank A	0x1181EA28 (selections begin at 0x1181EA2C)
DNR bank B	0x1181EA70 (selections begin at 0x1181EA74)
Changed words	12
Entry point	0x11816F60 (unchanged)
Stock checksum	00A697C9
Patched checksum	00A699FD

Package files

CUSTOM/AH057_V0111.dat - experimental DNR image.

STOCK_ROLLBACK/AH057_V0111.dat - untouched stock rollback image.

FW-DSP.exe - Yaesu DSP transfer utility.

PATCH_DIFF.txt - exact changed DSP words.

DNR_15_SELECTION_COMPARISON.csv - complete selection-by-selection comparison.

Before flashing

1. Confirm the radio model matches this package.
2. Back up or write down important memories and menu settings.
3. Install the Yaesu virtual COM-port driver.
4. Use a standard USB A-to-B cable directly to the radio if possible.
5. Keep the STOCK_ROLLBACK folder unchanged and immediately available.

Flash the experimental DSP image

1. Turn the transceiver OFF. Disconnect the DC cable and other cables from the radio.
2. Connect the radio USB port to the PC with a standard USB cable.
3. Reconnect the DC cable and turn the external power supply ON.
4. While holding **F(M-LIST) + MENU(SETUP) + BAND**, press and hold **POWER** to turn the radio on. The radio enters DSP write mode.
5. Run **FW-DSP.exe**.
6. Click **Configure** and select the radio's **Enhanced COM Port**.
7. Click **Browse** and select **CUSTOM/AH057_V0111.dat**.
8. Click **WRITE**. Do not disconnect USB, remove DC power, close the updater, or operate the radio during transfer.
9. Wait for completion / **OK?**, then click **OK**.
10. Hold the radio **POWER** key to turn it OFF. End/close the updater and disconnect the USB cable.
11. Power the radio on normally.

DNR test procedure

Use a stable SSB signal and keep RF gain, bandwidth, AGC, contour/notch settings, speaker/headphones, and volume as constant as possible. First listen with DNR OFF, then test DNR selections 1 through 8 individually. Judge intelligibility, consonant clarity, background hiss, and watery/bubbly artifacts rather than quietness alone. Selections 9 through 15 are useful controls because their confirmed parameter values were already the same as the newer Yaesu table.

Stop testing and restore stock immediately if receive audio becomes distorted, unstable, intermittent, abnormally loud/quiet, or otherwise behaves unexpectedly.

Restore stock DSP firmware

Repeat the same DSP write-mode entry procedure. Run FW-DSP.exe, select the Enhanced COM Port, then browse to **STOCK_ROLLBACK/AH057_V0111.dat** and write it. Allow the transfer to finish completely, power the radio off, disconnect USB, then power it on normally and verify normal receive/DNR operation.

Image verification

Image	SHA-256
Stock	86cd7d9a7a3677a362baf98b42239ffc5fc8a812bcfd9c61deaccc138d3905b3
Patched	086d8991bf4b0766330e2c34c51e42d70679324ac145161f7fead819a11ab848

PATCH_DIFF.txt contains the exact address/hex/float changes. DNR_15_SELECTION_COMPARISON.csv contains the complete 15-selection comparison used to validate the port.