Airspy HF+ Test Report

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The following tests were performed on an AIRSPY HF+, running under SDR# Rev. 1664 and Firmware R1.6.7 on Win7 Pro, 64-bit. The software was installed and the firmware upgrade performed per the instructions on the Airspy HF+ website:

- https://airspy.com/quickstart/
- https://airspy.com/airspy-hf-plus/ *(scroll down for latest firmware)*
- https://airspy.com/download/

1. Noise Power Ratio (NPR): Test setup: Wandel & Goltermann RS-50 and RS-25 white noise generators, fitted with filters as per Table 1. The noise generator was connected to the AIRSPY HF+ input via a 75/50Ω matching transformer. The noise loading was increased until NPR (the difference in dB between the top and bottom of the notch) reached a peak value, then read off the generator's attenuator scale.

- Reference: http://www.ab4oj.com/test/docs/npr_test.pdf

The noise loading in a given bandpass width is equivalent to the stated number of contiguous SSB channels; thus, the NPR test simulates a band packed with very strong signals.

Test Conditions: DUT tuned to notch centre freq., SSB, B = 2.4 kHz, AGC ON, Preamp OFF, HF AGC ON (default settings), HF Threshold Low, FFT Spectrum Analyser only. Airspy HF+ Bandwidth and FFT Resolution set for optimum display width and smoothing.

Table 1: AIRSPY HF+ NPR

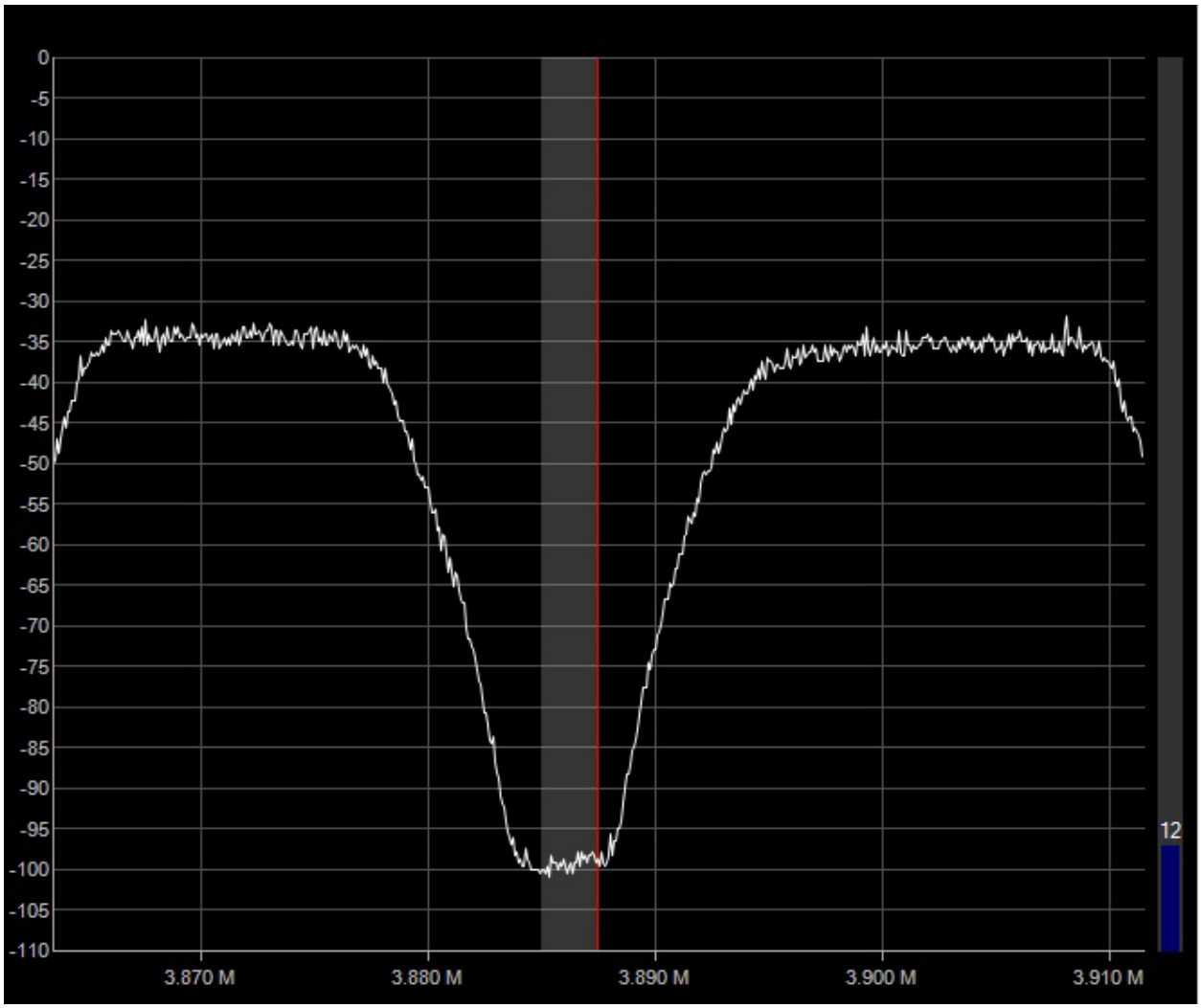
Bandstop kHz	Bandpass kHz	USB/LSB	Noise loading P_{TOT} dBm	NPR dB
1940	60-2048	LSB	-17	62
3886	60-4100		-18	66
4650	60-5600		-12	62
5340	60-5600	USB	-13	62
7600	12-8160	LSB	-12	62
11700	316-12360	USB	-12	56
16400	316-17300		-13	54

By comparison, the Perseus has 75 dB NPR at higher noise loading levels, i.e. higher signal strength per equivalent channel.

Noise loading is set for best NPR reading. Due to AGC hysteresis, there is a 2-4 dB difference between noise loading adjustment from the low side vs. the high side.

- Reference: http://www.ab4oj.com/sdr/perseus/perseus_notes.pdf pp. 12-15

Figure 1: AIRSPY HF+ NPR notch spectrum at 5340 kHz.



2. Sensitivity (MDS): Test setup: HP/Agilent 8935 E6380A, connected to AIRSPY HF+ via a 30 dB fixed attenuator.

The input power required to display a spike 3 dB above the noise floor on the spectrum scope was recorded at various frequencies.

Table 2: AIRSPY HF+ Sensitivity (+3dBr spike)

Test freq. MHz	Input power dBm
1.9	-102
3.6	-40
14.1	-148
28.1	-146
50.1	-145