

Sherwood Engineering HF Test Results

Model: NRD-630

Serial # ZA9002x

Test Date: 06/30/2007

6.0 kHz IF BW -6 / -40 kHz	5.92/6.96	Ultimate	60	dB
2.7 kHz IF BW -6 / -40 kHz	2.47/3.40	Ultimate	60	dB
500 Hz IF BW -6 / -40 kHz	570/730	Ultimate	60	dB

Front End Selectivity (A – F)		pseudo octave	B
IF Rejection, 10 MHz @	455 kHz IF	>110	dB
First IF Rejection @	70.455 MHz IF	96	dB

Dynamic Range 50 kHz		dB	IP3		dBm
Dynamic Range 20 khz	95	dB	IP3	+14	dBm
Dynamic Range 5 kHz	75	dB	IP3	-16	dBm
Dynamic Range 2 kHz	70	dB	IP3	-24	dBm

Blocking above noise floor at 100 kHz spacing	(noise increase)	129	dB
Phase noise (normalized) at 10 kHz spacing:		116	dBc

Noise floor, SSB bandwidth 29 MHz	-121	dBm
Sensitivity at 29 MHz	0.6	uV

Noise floor, CW bandwidth 14 MHz, preamp ON	-138	dBm
Noise floor, CW bandwidth 14 MHz	-129	dBm
Noise floor, SSB bandwidth 14 MHz, preamp ON	-131	dBm
Noise floor, SSB bandwidth 14 MHz	-122	dBm
Sensitivity at 14 MHz	0.5	uV
Sensitivity at 14 MHz, preamp ON	0.16	uV

Noise floor, SSB, 10 MHz	-122	dBm
Sensitivity 10 MHz	0.5	uV

Noise floor, SSB, 5 MHz	-122	dBm
Sensitivity 5 MHz	0.5	uV

Noise floor, SSB, 2 MHz	-121	dBm
Sensitivity, 2 MHz	0.6	uV

Noise floor, SSB, 1 MHz	-122	dBm
Sensitivity, 1 MHz	0.5	uV

Noise floor, SSB, 200 kHz	-122	dBm
Sensitivity, 200 kHz	0.5	uV

AGC threshold at -3 dB, preamp OFF	3.6	uV
AGC threshold at -3 dB, preamp ON	0.8	uV
Preamp gain:	13	dB
Attenuators:	10 & 20	dB
Drift	< 5	Hz

Distortion:	SSB		AM		AM frequency roll off
100 Hz	0.3 %		? %		-45 dB
200 Hz	0.5 %		10 %		-19 dB
400 Hz	0.3 %		1 %		0 dB
1 kHz	0.3 %		1 %		0 dB
2 kHz	<0.1 %		<0.1 %		0 dB
3 kHz	<0.1 %		%		

The roll-off of the lows on AM was so severe that a distortion reading at 100 Hz was meaningless.

Comments:

According to JRC, the radio was designed as a marine training radio. All the basic features are there, but the addition of DSP has only replaced discrete IF filters with digital ones. The DSP does not offer a manual or auto notch for heterodynes or audio DSP noise reduction, something that could have been implemented in firmware. Basically this is a no frills radio for a relatively high price. One would not even know there is DSP in the radio from the front panel, as the filter bandwidths are hard coded to buttons that have bandwidths labeled on them. The radio does offer ISB, and one selects which sideband by alternating pushing the button. There may be few ISB transmissions in this day and age for this feature to matter. No sync mode is available for AM reception, though the radio is very stable, and with 1 Hz tuning, ECSS may provide adequate for voice transmissions.

Some SSB signals show significant AGC attack distortion, while others are clean. The different audio characteristics of varying people speaking may be the cause of the difference. When using an external speaker, adequate volume is reached with very little rotation of the control, making level setting somewhat tedious.

The filter bandwidth choices are 6 kHz, 3.0 kHz, 2.7 kHz, 1.0 kHz, 500 Hz and 300 Hz. ISB operation does not allow selecting the bandwidth, assumed to be 2.7 kHz. A narrower sideband bandwidth selection would be useful. The radio has both squelch and passband tuning knobs, and the unlit meter can show relative signal strength of 0 to 10, or

a VU style audio level, calibrated from -10 to +5. The S meter calibration is more on the line of an R-390A, with no S unit or dBm scale.

Passband tuning works regardless of mode, and synthesizer step selection offers, 1, 10 & 100 Hz, 1, 5, 9 & 10 kHz, plus a somewhat useless 100 kHz step. The noise blanker proved effective on ignition noise. No line noise was heard to test its function on that common source of racket.

JRC says the rack-eared radio can be mounted in the same cabinet as used with the earlier 301A receiver. The internal speaker is forward facing, a big plus in a rack environment, though better results will be obtained with a more full-range speaker. While the NVA-319 speaker mates with the 630, the reviewer prefers the added bass of the larger driver in the Icom SP-20. Both speakers offer bass and treble cut options, sometimes useful in noisy conditions. The NVA-92L speaker listed on Universal's web site includes a matching transformer, possibly since earlier JRC receivers expected a 600 ohm load. The radio is listed as providing a standard 8 ohm output, so any normal communications speaker would work well.