

Sherwood Engineering HF Test Results

Model: Ten-Tec 340 Serial # 10003 Test Date 7/14/2000

IF BW, 8 kHz AM -6/-60, kHz: 8.30/10.55	Ultimate	70	dB		
IF BW, 6 kHz AM, -6/-60, kHz 6.47/8.60	Ultimate	70	dB		
IF BW, 4 kHz AM -6/-60, kHz: 4.14/4.77	Ultimate	70	dB		
IF BW, 2.4 kHzSSB,-6/-60, kHz: 2.54/3.13	Ultimate	70	dB		
IF BW, 500 Hz CW, -6/-60, Hz: 518/597	Ultimate	70	dB		
Front End Selectivity (A - F)			B		
Image Rejection, 10 MHz (@ 455_kHz IF)			100	dB	
First IF Rejection (@ 45.455_MHz IF)			100	dB	
Dynamic Range, 15 MHz, DR 20:(500 Hz BW) 93	dB	IP3	+9	dBm	
Dynamic Range, 15 MHz, DR 5: 46 dB	IP3	-55	dBm		
Dynamic Range, 15 MHz. DR 100: 93 dB	IP3	+21	dBm		
Blocking at 100 kHz			109	dB	
• Phase Noise (normalized) @ 10 kHz offset:			113	dBc/Hz	
Noise floor, 2.4 kHz BW, 29.9 MHz		-121	dBm		
Sensitivity, 2.4 kHz BW, 29.9 MHz		0.55	uV		
Noise floor, 2.4 kHz BW, 14.2 MHz		-123	dBm		
Noise floor, 500 Hz BW, 14.2 MHz		-131	dBm		
Sensitivity, 3.2 kHz BW, 14.2 MHz	-111	dBm	0.67	uV	
Sensitivity, 2.4 kHz BW, 14.2 MHz	-115	dBm	0.4	uV	
Noise floor, 2.4 kHz, preamp on, RF 10, 14.2 Mhz		-133	dBm		
Sensitivity, 2.4 kHz, preamp on, RF 10, 14.2 MHz		0.14	uV		
Noise floor, SSB bandwidth 10 & 5 MHz		-122	dBm		
Sensitivity, SSB bandwidth 10 & 5 MHz		0.5	uV		
Noise floor at 2 MHz		-123	dBm		
Sensitivity at 2 MHz		0.4	uV		
Noise floor at 1 MHz		-125	dBm		
Sensitivity at 1 MHz		0.36	uV		
Noise floor at 200 kHz		-125	dBm		
Sensitivity at 200 kHz		0.35	uV		
AGC Threshold at -3 dB:	-113	dBm	0.5	uV	
AGC, 10 dB preamp on, RF gain 10	-124	dBm	0.13	uV	
Stability at 10 MHz after 10 second warmup				5Hz	
Frequency response, distortion AM, 60% modulation,					
				narrow BW	wide BW
100 Hz	-2.8	dB	3.3	%	3.3 %•
200 Hz	-1.2	dB	1.0	%	0.5 %
400 Hz	-0.1	dB	1.0	%	1.0 %
1000 Hz	ref	dB	1.2	%	1.2 %
2000 Hz	-2.2	dB	0.6	%	1.0 %
3000 Hz	-7.8	dB	1.0	%	2.5 %

Distortion SSB

100 Hz -13.5	dB	0.3%
200 Hz -5.4	dB	0.3%•
400 Hz -0.4	dB	0.2%
1000 Hz ref	dB	0.3 %
2000 Hz +0.2	dB	0.1 %
2400 Hz +0.2	dB	0.1 %

Distortion, Synchronous AM, if available, BW : 6 kHz

100 Hz	-2.5	dB	5 %
200 Hz	-1.2	dB	1.4%
400 Hz	-0.1	dB	1.5%
1000 Hz ref		dB	0.8%
2000 Hz	-6	dB	4 %
3000 Hz	-18	dB	3 %

Is distortion similar at record jack as headphone output? Yes

Gain pots other than AF: RF or IF?	RF	
Attenuators .	15	dB
Preamp:	10	dB
Audio notches•		
Notch depth :	58	dB
Variable, range: SSB/CW only	+/- 2Khz	kHz

Comments:

AGC threshold is way too low with preamp on, unless RF gain backed off to "10" on the front panel scale. Otherwise the radio doesn't quiet properly due to AGC starting virtually at the noise floor.

Annoying level of "tweety birds" from synthesizer. A single tone sometimes comes out two tones. Move tuning knob 20 to 50 Hz, and the double beat goes away.

Filter ultimate rejection is only 70 dB, which is spec.

Image rejection better than spec. Did not measure above 100 dB.

Does not quite meet IP3 spec of +25 dBm. (21 dBm measured at 100 kHz)

Spec does not specify IP3 test spacing. Ten-Tec may be using IP3 measurement method used by AOR that produces somewhat higher numbers.

Phase noise meets spec at 20 kHz, but is a disappointment in this expensive a radio. The phase noise was actually measured at 20 kHz and interpolated for the 10 kHz reading, as is often necessary. However, this model could not be measured at all at 10 kHz due to blocking, likely occurring in the DSP.

The sync detector is primitive at this point in its evolution. No PBT, no selectable sideband. You center tune to within 200 to 300 Hz, and SAM activates if selected. This can be noted by periods appearing: S.A.M. When rapidly fading signals are encountered,

it is not unusual for the SAM detector to put out a burst of white noise. Rather distracting. The SAM detector does work better than the standard AM detector on fading signals. Bandwidth selection is limited to 4 khz to 16 khz.

As an aside, the SE-3 works just as well with the 340 as with the WJ HF-1000A and 8711A receivers, allowing full bandwidth control and full passband tuning. Fully bandwidth filtered IF output is on rear panel at a nominal -10 dBm level.

Later RX-340 sample comparisons

S.N. 10147, June 2001 S.N. 10386, July 2005

Dynamic range measured with 500 Hz CW filter:

DR3 100 kHz	96 dB	
DR3 50 kHz		99 dB
DR3 20 kHz	84 dB	90 dB
DR3 5 kHz	46 dB	55 dB

Dynamic range measured with 2400 Hz SSB filter:

DR3 100 kHz	96 dB	
DR3 50 kHz		95 dB
DR3 20 kHz	84 dB	86 dB
DR3 5 kHz	46 dB	55 dB

Noise floor:

NF 2400 Hz, Pre off	-123 dBm	-122 dBm
NF 2400 Hz, Pre on	-133 dBm	-130 dBm
NF 500 Hz, Pre off	-130 dBm	-128 dBm
NF 500 Hz, Pre on	-139 dBm	-138 dBm

Sensitivity:

Preamp off:	0.5 uV	0.55 uV
Preamp on:	0.16 uV	0.17 uV

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