Yaesu FTDX-5000D NPR & TX Phase Noise Test Report

FW Ver. AH036H012. 12-15 November 2015. A. Farson VA7OJ/AB4OJ

Test Conditions: SSB, B = 2.4 kHz, AGC Slow, ATT off, NB off, DNR off.

Table 1: Noise Power Ratio (NPR), Main Receiver. P_{TOT} in dBm, NPR in dB.

f_0 kHz	IPO						AMP 1						AMP 2					
	R15		R6		R3		R15		R6		R3		R15		R6		R3	
	P_{TOT}	NPR	P_{TOT}	NPR	P_{TOT}	NPR	P_{TOT}	NPR	P_{TOT}	NPR	P_{TOT}	NPR	P_{TOT}	NPR	P_{TOT}	NPR	P_{TOT}	NPR
1940	-18	71	-18	71	-19.5	69	-34	67	-34	68	-35	67	-40	67	-40	68	-40	67
VRF	-4.5	85	-6	84	-5	80	-21	80	-21	81	-21	81	-25	83	-25	83	-26	81
3886	-24	62	-25	61	-25	61	-36	62	-37	62	-37	62	-43	60	-44	60	-44	60
VRF	-23	63	-23	61	-23	63												
5340	-18	64	-18	65	-19	64	-33	61	-33	62	-35	60	-41	58	-41	59	-40	58
7600	-17	63	-17	64	-17	67	-30	62	-31	63	-32	62	-37	59	-37	59	-37	59
11700	-21	58	-22	57	-22	57	-31	61	-31	60	-32	60	-36	61	-36	61	-37	61

Note: 11700 kHz NPR degraded by noise loading leakage into 9 MHz 1st IF.

Table 2: Noise Power Ratio (NPR), Sub Receiver. P_{TOT} in dBm, NPR in dB.

f_0 kHz	IPO						AMP 1						AMP 2					
	R15		R6		R3		R15		R6		R3		R15		R6		R3	
	P_{TOT}	NPR	P_{TOT}	NPR	P_{TOT}	NPR	P_{TOT}	NPR	P_{TOT}	NPR	P_{TOT}	NPR	P_{TOT}	NPR	P_{TOT}	NPR	P_{TOT}	NPR
1940	-10	78	-11	78	-10	76	-19	78	-20	79	-19	78	-29	75	-29	76	-29	74
VRF	-11	79	-11	79	-10	78												
3886	-11	74	-11	74	-10	73	-23	73	-23	74	-22	72	-30	72	-30	73	-30	71
VRF	-16	73	-15	75	-14	72												
5340	-17	66	-18	66	-16	67	-29	65	-30	66	-28	66	-35	65	-35	67	-35	68
VRF	-15	73	-15	74	-14	73												
7600	-8.5	74	-9	75	-8	73	-18	75	-18	77	-17	74	-27	72	-27	73	-27	71
11700	-14	67	-14	67	-13	67	-25	66	-25	67	-23	66	-32	66	-32	67	-31	-67

Table 3: NPR Test Filter Parameters

f_0 & BSF kHz	BLF kHz	Mode	BWR dB
1940	60…2044	LSB	29.2
3886	60…4100	LSB	32.3
5340	60…5600	USB	33.6
7600	316…8160	LSB	35.1
11700	0…13000	USB	37.3

P_{TOT}: Total noise loading

BSF: Bandstop Filter

BLF: Band-Limiting Filter

BWR: Bandwidth Ratio = B_{RF}/B_{IF}

Table 4: MDS for NPR Test, Main Receiver

	MDS dBm at B = 2.4 kHz									
f_0 kHz	IPO			AMP1			AMP2			VRF Offset
	R15	R6	R3	R15	R6	R3	R15	R6	R3	dB
1940	-118	-118	-118	-130	-131	-131	-136	-137	-136	0
3886	-118	-118	-118	-130	-131	-131	-136	-136	-136	-1
5340	-116	-117	-117	-128	-129	-129	-134	-135	-134	0
7600	-115	-116	-119	-128	-129	-129	-133	-133	-133	off
11700	-116	-117`	-117	-129	-130	-130	-134	-135	-135	off

Table 5: MDS for NPR Test, Sub Receiver

	MDS dBm at B = 2.4 kHz									
f_0 kHz	IPO			AMP1			AMP2			VRF Offset
	R15	R6	R3	R15	R6	R3	R15	R6	R3	dB
1940	-117	-118	-115	-127	-128	-126	-133	-134	-132	+2
3886	-118	-118	-116	-128	-128	-126	-134	-135	-133	+3
5340	-117	-118	-116	-128	-129	-127	-134	-136	-134	+5
7600	-118	-119	-116	-128	-130	-127	-134	-135	-133	off
11700	-118	-119	-117	-128	-129	-127	-135	-136	-135	off

Reference 1: NPR Testing of HF Receivers

Figure 1: Transmitted Phase Noise (Composite Noise)