

EXHIBIT J: PROCESSING GAIN INFORMATION [15.247(e)]

PRODUCT NAME: AIRONET 4800B RADIO

NAME OF TEST: The Processing Gain of a Direct Sequence System.

FCC Part 15.247 (e) specifies:

The processing gain of a direct sequence system shall be at least 10 dB.

Guidance on measurement by FCC

The processing gain may be measured using the CW jamming margin method. The test consists of stepping a signal generator in 50kHz increments across the passband of the system. At each point, the generator level required to produce the recommended Bit Error Rate (10⁻⁵) is recorded. This is the jammer level. The output power of the transmitting unit is measured at the same point. The Jammer to Signal (J/S) ratio is then calculated. Discard the worst 20% of the J/S data points. Total losses in a system including transmitter and receiver, should be assumed to be no more than 2 dB.

therefore, processing gain = S/N + Mj + Lsys

Where :

S/N = Signal to noise ratio required at the receiver output for 10⁻⁵ error rate of a ideal receiver for your demodulation scheme

Mj = Jammer to signal ratio

Lsys = System losses (2dB max)

Test results :

for 1 mb data rate:

S/N = 13 dB ; taken from Wireless Information Networks by Pahlavan & Levesque

Mj = - 4.2 dB ; worst case jamming margin from tests in lab

Lsys = 2.0 dB ; system losses

therefore the processing gain at 1mb is 13 dB - 4.2 dB + 2.0 dB = 10.8 dB

for 2 mb data rate:

S/N = 13 dB ; taken from Wireless Information Networks by Pahlavan & Levesque

Mj = - 4.2 dB ; worst case jamming margin from tests in lab

Lsys = 2.0 dB ; system losses

therefore the processing gain at 2mb is 13 dB - 4.2 dB + 2.0 dB = 10.8 dB

Tested February 2, 2000

for 5.5 mb data rate:

S/N = 13.6 dB ; taken from Harris CCK encoding modulation

Mj = - 4.4 dB ; worst case jamming margin from tests in lab (after 20% discard)

Lsys = 2.0 dB ; system losses

therefore the processing gain at 5.5mb is 13.6 dB - 4.4 dB + 2.0 dB = 11.2 dB

for 11 mb data rate:

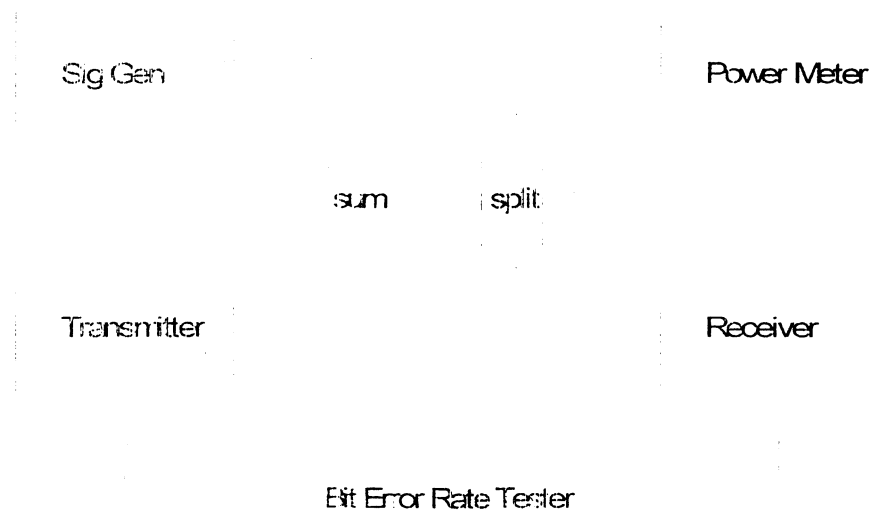
S/N = 16.0 dB ; taken from Harris CCK encoding modulation

Mj = - 7.4 dB ; worst case jamming margin from tests in lab (after 20% discarded)

Lsys = 2.0 dB ; system losses

therefore the processing gain at 11mb is 16.0 dB - 7.4 dB + 2.0 dB = 10.6 dB

Jamming Test Setup

**AIRONET**

RF Systems Engineering

2.4 GHz SPREAD SPECTRUM RADIO, 2nd GEN

Jammer Test, R240

eng. J. Friedman
dvg. J. FriedmanFile: FCC021206K
Date: 7/21/00
rev.**AIRONET CONFIDENTIAL**

Tested February 2, 2000

Data: Processing Gain by method of Jamming margin

processing gain by method of jamming margin using BER tester															
radio conditions : supply voltage 5v, at room temp, rx s/n = #40, tx s/n = #27															
tester name : Brian Casto / Jim Friedmann															
test date : 3/17/98		radio carrier freq= 2465													
Gp = S/N + Mj + Lsys; where S/N = 16.6 dB as per Harris MBOK modulation; Lsys = 2dB															
input signal level = -30 dBm, jammer level = -38.1 dBm, then Mj= -8.1 dB for 10-5 BER															
Gp = 16.6 dB, + -7.1 dB + 2 dB = 11.5 dB (worst case point after lowest 20% discarded)															
	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
1	2456.50	19	pass	41	2458.50	12	pass	81	2460.50	10.5	pass	121	2462.50	12.5	pass
2	2456.55	19	pass	42	2458.55	12	pass	82	2460.55	10.5	pass	122	2462.55	12.5	pass
3	2456.60	19	pass	43	2458.60	12	pass	83	2460.60	10.5	pass	123	2462.60	12.5	pass
4	2456.65	19	pass	44	2458.65	12	pass	84	2460.65	10.5	pass	124	2462.65	12.5	pass
5	2456.70	19	pass	45	2458.70	12	pass	85	2460.70	10.5	pass	125	2462.70	12.5	pass
6	2456.75	19	pass	46	2458.75	12	pass	86	2460.75	10.5	pass	126	2462.75	11.5	pass
7	2456.80	19	pass	47	2458.80	12	pass	87	2460.80	10.5	pass	127	2462.80	11.5	pass
8	2456.85	19	pass	48	2458.85	12	pass	88	2460.85	10.5	pass	128	2462.85	11.5	pass
9	2456.90	19	pass	49	2458.90	12	pass	89	2460.90	10.5	pass	129	2462.90	11.5	pass
10	2456.95	19	pass	50	2458.95	12	pass	90	2460.95	10.5	pass	130	2462.95	11.5	pass
11	2457.00	19	pass	51	2459.00	10.5	pass	91	2461.00	11.5	pass	131	2463.00	11.5	pass
12	2457.05	16	pass	52	2459.05	10.5	pass	92	2461.05	11	pass	132	2463.05	11.5	pass
13	2457.10	16	pass	53	2459.10	10.5	pass	93	2461.10	11	pass	133	2463.10	11.5	pass
14	2457.15	16	pass	54	2459.15	10.5	pass	94	2461.15	11	pass	134	2463.15	11.5	pass
15	2457.20	16	pass	55	2459.20	10.5	pass	95	2461.20	11	pass	135	2463.20	11.5	pass
16	2457.25	16	pass	56	2459.25	10.5	pass	96	2461.25	11	pass	136	2463.25	11.5	pass
17	2457.30	16	pass	57	2459.30	10.5	pass	97	2461.30	10.5	pass	137	2463.30	11.5	pass
18	2457.35	16	pass	58	2459.35	10.5	pass	98	2461.35	10.5	pass	138	2463.35	11.5	pass
19	2457.40	16	pass	59	2459.40	10.5	pass	99	2461.40	10.5	pass	139	2463.40	11.5	pass
20	2457.45	16	pass	60	2459.45	10.5	pass	100	2461.45	10.5	pass	140	2463.45	11.5	pass
21	2457.50	16	pass	61	2459.50	10.5	pass	101	2461.50	10.5	pass	141	2463.50	11.5	pass
22	2457.55	16	pass	62	2459.55	10.5	pass	102	2461.55	10.5	pass	142	2463.55	11.5	pass
23	2457.60	16	pass	63	2459.60	10.5	pass	103	2461.60	10.5	pass	143	2463.60	11.5	pass
24	2457.65	16	pass	64	2459.65	10.5	pass	104	2461.65	10.5	pass	144	2463.65	11.5	pass
25	2457.70	16	pass	65	2459.70	10.5	pass	105	2461.70	10.5	pass	145	2463.70	11.8	pass
26	2457.75	16	pass	66	2459.75	10.5	pass	106	2461.75	10.5	pass	146	2463.75	11.8	pass
27	2457.80	16	pass	67	2459.80	10.5	pass	107	2461.80	11.5	pass	147	2463.80	11.8	pass
28	2457.85	16	pass	68	2459.85	10.5	pass	108	2461.85	11.5	pass	148	2463.85	11.8	pass
29	2457.90	16	pass	69	2459.90	10.5	pass	109	2461.90	12.5	pass	149	2463.90	11.8	pass
30	2457.95	16	pass	70	2459.95	10.5	pass	110	2461.95	12.5	pass	150	2463.95	11.8	pass
31	2458.00	16	pass	71	2460.00	10.5	pass	111	2462.00	12.5	pass	151	2464.00	11.8	pass
32	2458.05	12	pass	72	2460.05	10.5	pass	112	2462.05	12.5	pass	152	2464.05	11.8	pass
33	2458.10	12	pass	73	2460.10	10.5	pass	113	2462.10	12.5	pass	153	2464.10	11.8	pass
34	2458.15	12	pass	74	2460.15	10.5	pass	114	2462.15	12.5	pass	154	2464.15	11.8	pass
35	2458.20	12	pass	75	2460.20	10.5	pass	115	2462.20	12.5	pass	155	2464.20	11.8	pass
36	2458.25	12	pass	76	2460.25	10.5	pass	116	2462.25	12.5	pass	156	2464.25	11.8	pass
37	2458.30	12	pass	77	2460.30	10.5	pass	117	2462.30	12.5	pass	157	2464.30	11.8	pass
38	2458.35	12	pass	78	2460.35	10.5	pass	118	2462.35	12.5	pass	158	2464.35	11.8	pass
39	2458.40	12	pass	79	2460.40	10.5	pass	119	2462.40	12.5	pass	159	2464.40	11.8	pass
40	2458.45	12	pass	80	2460.45	10.5	pass	120	2462.45	12.5	pass	160	2464.45	11.8	pass
drop 20% = 340 x 20% = 68 : therefore can drop up to 68 lowest pts															

Tested February 2, 2000

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Jamming margin at 11 mb (part2)

processing gain by methods of jamming margin using BER tester											
radio conditions : supply voltage 5v, at room temp											
tester name : Brian Casto / Jim Friedmann											
Gp = S/N + Mj + Lsys; where S/N = 16.6 dB as per Harris MBOK modulation; Lsys = 2dB											
Input signal level = -30 dBm, jammer level = -38.1 dBm, then Mj = -8.1 dB for 10-5 BER											
Gp = 16.6 dB + -7.1 dB + 2 dB = 11.5 dB (worst case point after lowest 20% discarded)											
	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
161	2464.50	11.8	pass	206	2466.75	12	pass	251	2469.00	12	pass
162	2464.55	11.8	pass	207	2466.80	12	pass	252	2469.05	12	pass
163	2464.60	11.8	pass	208	2466.85	12	pass	253	2469.10	12	pass
164	2464.65	11.8	pass	209	2466.90	12	pass	254	2469.15	12	pass
165	2464.70	11.8	pass	210	2466.95	12	pass	255	2469.20	12	pass
166	2464.75	11.8	pass	211	2467.00	12	pass	256	2469.25	12	pass
167	2464.80	11.8	pass	212	2467.05	12	pass	257	2469.30	12	pass
168	2464.85	11.8	pass	213	2467.10	12	pass	258	2469.35	12	pass
169	2464.90	11.8	pass	214	2467.15	12	pass	259	2469.40	12	pass
170	2464.95	11.8	pass	215	2467.20	12	pass	260	2469.45	12	pass
171	2465.00	13.5	pass	216	2467.25	12	pass	261	2469.50	12	pass
172	2465.05	13.5	pass	217	2467.30	12	pass	262	2469.55	12	pass
173	2465.10	13.5	pass	218	2467.35	12	pass	263	2469.60	12	pass
174	2465.15	13.5	pass	219	2467.40	12	pass	264	2469.65	12	pass
175	2465.20	13.5	pass	220	2467.45	12	pass	265	2469.70	12	pass
176	2465.25	13.5	pass	221	2467.50	12	pass	266	2469.75	12	pass
177	2465.30	13.5	pass	222	2467.55	12	pass	267	2469.80	12	pass
178	2465.35	13.5	pass	223	2467.60	12	pass	268	2469.85	12	pass
179	2465.40	13.5	pass	224	2467.65	12	pass	269	2469.90	12	pass
180	2465.45	13.5	pass	225	2467.70	12	pass	270	2469.95	12	pass
181	2465.50	13.5	pass	226	2467.75	12	pass	271	2470.00	12	pass
182	2465.55	13.5	pass	227	2467.80	12	pass	272	2470.05	12	pass
183	2465.60	13.5	pass	228	2467.85	12	pass	273	2470.10	12	pass
184	2465.65	13.5	pass	229	2467.90	12	pass	274	2470.15	12	pass
185	2465.70	13.5	pass	230	2467.95	12	pass	275	2470.20	12	pass
186	2465.75	13.5	pass	231	2468.00	12.5	pass	276	2470.25	12	pass
187	2465.80	13.5	pass	232	2468.05	12.5	pass	277	2470.30	12	pass
188	2465.85	13.5	pass	233	2468.10	12.5	pass	278	2470.35	12	pass
189	2465.90	13.5	pass	234	2468.15	12.5	pass	279	2470.40	12	pass
190	2465.95	13.5	pass	235	2468.20	12.5	pass	280	2470.45	12	pass
191	2466.00	12	pass	236	2468.25	12.5	pass	281	2470.50	12	pass
192	2466.05	12	pass	237	2468.30	12.5	pass	282	2470.55	12	pass
193	2466.10	12	pass	238	2468.35	12.5	pass	283	2470.60	12	pass
194	2466.15	12	pass	239	2468.40	12.5	pass	284	2470.65	12	pass
195	2466.20	12	pass	240	2468.45	12.5	pass	285	2470.70	12	pass
196	2466.25	12	pass	241	2468.50	12.5	pass	286	2470.75	12	pass
197	2466.30	12	pass	242	2468.55	12.5	pass	287	2470.80	12	pass
198	2466.35	12	pass	243	2468.60	12.5	pass	288	2470.85	12	pass
199	2466.40	12	pass	244	2468.65	12.5	pass	289	2470.90	12	pass
200	2466.45	12	pass	245	2468.70	12.5	pass	290	2470.95	12	pass
201	2466.50	12	pass	246	2468.75	12.5	pass	291	2471.00	12	pass
202	2466.55	12	pass	247	2468.80	12.5	pass	292	2471.05	12	pass
203	2466.60	12	pass	248	2468.85	12.5	pass	293	2471.10	12	pass
204	2466.65	12	pass	249	2468.90	12.5	pass	294	2471.15	12	pass
205	2466.70	12	pass	250	2468.95	12.5	pass	295	2471.20	12	pass
drop 20% = 340 x 20% = 68 ; therefore can drop 68 lowest pts, next lowest pt is 11.5 dB, therefore unit passes proc gain test											

Tested February 2, 2000

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Jamming margin at 5.5mb (part1)

processing gain by method of jamming margin using BER tester															
radio conditions : supply voltage 5v, at room temp, rx s/n = #40, tx s/n = #27															
tester name : Brian Casto / Jim Friedmann															
test date : 3/17/98		radio carrier freq= 2465													
Gp = S/N + Mj + Lsys; where S/N = 13.6 dB as per Harris MOK modulation; Lsys = 0.5 dB															
Input signal level = -30 dBm, jammer level = -31.1 dBm, then Mj= - 1.1 dB for 10-5 BER															
Gp = 13.6 dB + -1.6 dB + 0.5 dB = 12.5 dB (worst case point)															
	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
1	2456.50	19	pass	41	2458.50	18	pass	81	2460.50	13	pass	121	2462.50	13.5	pass
2	2456.55	19	pass	42	2458.55	18	pass	82	2460.55	13	pass	122	2462.55	13.5	pass
3	2456.60	19	pass	43	2458.60	18	pass	83	2460.60	13	pass	123	2462.60	13.5	pass
4	2456.65	19	pass	44	2458.65	18	pass	84	2460.65	13	pass	124	2462.65	13.5	pass
5	2456.70	19	pass	45	2458.70	18	pass	85	2460.70	13	pass	125	2462.70	13.5	pass
6	2456.75	19	pass	46	2458.75	18	pass	86	2460.75	13	pass	126	2462.75	13.5	pass
7	2456.80	19	pass	47	2458.80	18	pass	87	2460.80	13	pass	127	2462.80	13.5	pass
8	2456.85	19	pass	48	2458.85	18	pass	88	2460.85	13	pass	128	2462.85	13.5	pass
9	2456.90	19	pass	49	2458.90	18	pass	89	2460.90	13	pass	129	2462.90	13.5	pass
10	2456.95	19	pass	50	2458.95	18	pass	90	2460.95	13	pass	130	2462.95	13.5	pass
11	2457.00	19	pass	51	2459.00	14	pass	91	2461.00	14	pass	131	2463.00	13.5	pass
12	2457.05	19	pass	52	2459.05	14	pass	92	2461.05	14	pass	132	2463.05	13.5	pass
13	2457.10	19	pass	53	2459.10	14	pass	93	2461.10	14	pass	133	2463.10	13.5	pass
14	2457.15	19	pass	54	2459.15	14	pass	94	2461.15	14	pass	134	2463.15	13.5	pass
15	2457.20	19	pass	55	2459.20	14	pass	95	2461.20	14	pass	135	2463.20	13.5	pass
16	2457.25	19	pass	56	2459.25	14	pass	96	2461.25	14	pass	136	2463.25	13.5	pass
17	2457.30	19	pass	57	2459.30	14	pass	97	2461.30	14	pass	137	2463.30	13.5	pass
18	2457.35	19	pass	58	2459.35	14	pass	98	2461.35	14	pass	138	2463.35	13.5	pass
19	2457.40	19	pass	59	2459.40	14	pass	99	2461.40	14	pass	139	2463.40	13.5	pass
20	2457.45	19	pass	60	2459.45	14	pass	100	2461.45	14	pass	140	2463.45	13.5	pass
21	2457.50	19	pass	61	2459.50	13	pass	101	2461.50	13	pass	141	2463.50	13.5	pass
22	2457.55	19	pass	62	2459.55	13	pass	102	2461.55	13	pass	142	2463.55	13.5	pass
23	2457.60	19	pass	63	2459.60	13	pass	103	2461.60	13	pass	143	2463.60	13.5	pass
24	2457.65	19	pass	64	2459.65	13	pass	104	2461.65	13	pass	144	2463.65	13.5	pass
25	2457.70	19	pass	65	2459.70	13	pass	105	2461.70	13	pass	145	2463.70	13.5	pass
26	2457.75	19	pass	66	2459.75	13	pass	106	2461.75	13	pass	146	2463.75	13.5	pass
27	2457.80	19	pass	67	2459.80	13	pass	107	2461.80	13	pass	147	2463.80	13.5	pass
28	2457.85	19	pass	68	2459.85	13	pass	108	2461.85	13	pass	148	2463.85	13.5	pass
29	2457.90	19	pass	69	2459.90	13	pass	109	2461.90	13	pass	149	2463.90	13.5	pass
30	2457.95	19	pass	70	2459.95	13	pass	110	2461.95	13	pass	150	2463.95	13.5	pass
31	2458.00	16	pass	71	2460.00	14	pass	111	2462.00	13	pass	151	2464.00	13.5	pass
32	2458.05	16	pass	72	2460.05	14	pass	112	2462.05	13	pass	152	2464.05	13.5	pass
33	2458.10	16	pass	73	2460.10	14	pass	113	2462.10	16	pass	153	2464.10	13.5	pass
34	2458.15	16	pass	74	2460.15	14	pass	114	2462.15	16	pass	154	2464.15	13.5	pass
35	2458.20	16	pass	75	2460.20	14	pass	115	2462.20	16	pass	155	2464.20	13.5	pass
36	2458.25	16	pass	76	2460.25	14	pass	116	2462.25	16	pass	156	2464.25	13.5	pass
37	2458.30	16	pass	77	2460.30	14	pass	117	2462.30	16	pass	157	2464.30	13.5	pass
38	2458.35	16	pass	78	2460.35	14	pass	118	2462.35	16	pass	158	2464.35	13.5	pass
39	2458.40	16	pass	79	2460.40	14	pass	119	2462.40	16	pass	159	2464.40	13.5	pass
40	2458.45	16	pass	80	2460.45	14	pass	120	2462.45	16	pass	160	2464.45	13.5	pass

Tested February 2, 2000

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Jamming margin at 5.5mb (part2)

processing gain by methode of jamming margin using BER tester															
radio conditions : supply voltage 5v, at room temp															
tester name : Brian Casto / Jim Friedmann															
Gp = S/N + Mj + Lsys; where S/N = 16.6 dB as per Harris MOK modulation; Lsys = 0.5 dB															
Input signal level = -30 dBm, jammer level = -31.1 dBm, then Mj= -1.1 dB for 10-5 BER															
Gp = 13.6 dB + -1.6 dB + 0.5 dB = 12.5 dB (worst case point)															
	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
161	2464.50	14	pass	206	2466.75	13	pass	251	2469.00	13.5	pass	296	2471.25	13.0	pass
162	2464.55	14	pass	207	2466.80	13	pass	252	2469.05	13.5	pass	297	2471.30	13.0	pass
163	2464.60	14	pass	208	2466.85	13	pass	253	2469.10	13.5	pass	298	2471.35	13.0	pass
164	2464.65	14	pass	209	2466.90	13	pass	254	2469.15	13.5	pass	299	2471.40	13.0	pass
165	2464.70	14	pass	210	2466.95	13	pass	255	2469.20	13.5	pass	300	2471.45	13.0	pass
166	2464.75	14	pass	211	2467.00	13	pass	256	2469.25	13.5	pass	301	2471.50	13.0	pass
167	2464.80	14	pass	212	2467.06	13	pass	257	2469.30	13.5	pass	302	2471.55	13.0	pass
168	2464.85	14	pass	213	2467.10	13	pass	258	2469.35	13.5	pass	303	2471.60	13.0	pass
169	2464.90	14	pass	214	2467.15	13	pass	259	2469.40	13.5	pass	304	2471.65	13.0	pass
170	2464.95	14	pass	215	2467.20	13	pass	260	2469.46	13.5	pass	305	2471.70	13.0	pass
171	2465.00	14	pass	216	2467.25	13	pass	261	2469.50	12.5	pass	306	2471.75	13.0	pass
172	2465.05	14	pass	217	2467.30	13	pass	262	2469.55	12.5	pass	307	2471.80	13.0	pass
173	2465.10	14	pass	218	2467.35	13	pass	263	2469.60	12.5	pass	308	2471.85	13.0	pass
174	2465.15	14	pass	219	2467.40	13	pass	264	2469.65	12.5	pass	309	2471.90	13.0	pass
175	2465.20	13.5	pass	220	2467.45	13	pass	265	2469.70	12.5	pass	310	2471.95	13.0	pass
176	2465.25	13.5	pass	221	2467.50	13	pass	266	2469.75	12.5	pass	311	2472.00	15	pass
177	2465.30	13.5	pass	222	2467.55	13	pass	267	2469.80	12.5	pass	312	2472.05	15	pass
178	2465.35	13.5	pass	223	2467.60	13	pass	268	2469.85	12.5	pass	313	2472.10	15	pass
179	2465.40	13.5	pass	224	2467.65	13	pass	269	2469.90	12.5	pass	314	2472.15	15	pass
180	2465.45	13.5	pass	225	2467.70	13	pass	270	2469.95	12.5	pass	315	2472.20	15	pass
181	2465.50	13.5	pass	226	2467.75	13	pass	271	2470.00	13	pass	316	2472.25	15	pass
182	2465.55	13.5	pass	227	2467.80	13	pass	272	2470.05	13	pass	317	2472.30	15	pass
183	2465.60	13.5	pass	228	2467.85	13	pass	273	2470.10	13	pass	318	2472.35	15	pass
184	2465.65	13.5	pass	229	2467.90	13	pass	274	2470.15	13	pass	319	2472.40	15	pass
185	2465.70	13.5	pass	230	2467.95	13	pass	275	2470.20	13	pass	320	2472.45	15	pass
186	2465.75	13.5	pass	231	2468.00	13.5	pass	276	2470.25	13	pass	321	2472.50	15	pass
187	2465.80	13.5	pass	232	2468.05	13.5	pass	277	2470.30	13	pass	322	2472.55	15	pass
188	2465.85	13.5	pass	233	2468.10	13.5	pass	278	2470.35	13	pass	323	2472.60	15	pass
189	2465.90	13.5	pass	234	2468.15	13.5	pass	279	2470.40	12.5	pass	324	2472.65	15	pass
190	2465.95	13.5	pass	235	2468.20	13.5	pass	280	2470.45	12.5	pass	325	2472.70	15	pass
191	2466.00	13.5	pass	236	2468.25	13.5	pass	281	2470.50	12.5	pass	326	2472.75	15	pass
192	2466.05	13.5	pass	237	2468.30	13.5	pass	282	2470.55	12.5	pass	327	2472.80	15	pass
193	2466.10	13.5	pass	238	2468.35	13.5	pass	283	2470.60	12.5	pass	328	2472.85	15	pass
194	2466.15	13.5	pass	239	2468.40	13.5	pass	284	2470.65	12.5	pass	329	2472.90	15	pass
195	2466.20	13.5	pass	240	2468.45	13.5	pass	285	2470.70	12.5	pass	330	2472.95	15	pass
196	2466.25	13.5	pass	241	2468.50	12.5	pass	286	2470.75	13	pass	331	2473.00	17	pass
197	2466.30	13.5	pass	242	2468.55	12.5	pass	287	2470.80	13	pass	332	2473.05	17	pass
198	2466.35	13.5	pass	243	2468.60	12.5	pass	288	2470.85	13	pass	333	2473.10	17	pass
199	2466.40	13.5	pass	244	2468.65	12.5	pass	289	2470.90	13	pass	334	2473.15	17	pass
200	2466.45	13.5	pass	245	2468.70	12.5	pass	290	2470.95	13	pass	335	2473.20	17	pass
201	2466.50	13.5	pass	246	2468.75	12.5	pass	291	2471.00	13	pass	336	2473.25	17	pass
202	2466.55	13.5	pass	247	2468.80	12.5	pass	292	2471.05	13	pass	337	2473.30	17	pass
203	2466.60	13.5	pass	248	2468.85	12.5	pass	293	2471.10	13	pass	338	2473.35	17	pass
204	2466.65	13.5	pass	249	2468.90	12.5	pass	294	2471.15	13	pass	339	2473.40	17	pass
205	2466.70	13.5	pass	250	2468.95	12.5	pass	295	2471.20	13	pass	340	2473.45	17	pass

Tested February 2, 2000

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Jamming margin at 2 mb (part1)

processing gain by methode of jamming margin using BER tester															
radio conditions : supply voltage 5v, at room temp, rx s/n = #40, tx s/n = #27															
tester name : Brian Casto / Jim Friedmann															
test date : 3/17/98			radio carrier freq=2465												
Gp = S/N + Mj + Lsys; where S/N = 13 dB as per Wireless Information Networks by Pahlavan & Levesque; Lsys = 0.5dB															
Input signal level = -30 dBm, jammer level = -31.5 dBm, then Mj= -1.5 dB															
Gp = 13.0 dB + -1.5 dB + 0.5 dB = 12.0 dB (worst case point)															
	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
1	2456.50	18	pass	41	2458.50	16	pass	81	2460.50	14	pass	121	2462.50	13.5	pass
2	2456.55	18	pass	42	2458.55	16	pass	82	2460.55	14	pass	122	2462.55	13.5	pass
3	2456.60	18	pass	43	2458.60	16	pass	83	2460.60	14	pass	123	2462.60	13.5	pass
4	2456.65	18	pass	44	2458.65	16	pass	84	2460.65	14	pass	124	2462.65	13.5	pass
5	2456.70	18	pass	45	2458.70	16	pass	85	2460.70	14	pass	125	2462.70	13.5	pass
6	2456.75	18	pass	46	2458.75	16	pass	86	2460.75	14	pass	126	2462.75	13.5	pass
7	2456.80	18	pass	47	2458.80	16	pass	87	2460.80	14	pass	127	2462.80	13.5	pass
8	2456.85	18	pass	48	2458.85	16	pass	88	2460.85	14	pass	128	2462.85	13.5	pass
9	2456.90	18	pass	49	2458.90	16	pass	89	2460.90	14	pass	129	2462.90	13.5	pass
10	2456.95	18	pass	50	2458.95	16	pass	90	2460.95	14	pass	130	2462.95	13.5	pass
11	2457.00	18	pass	51	2459.00	14.5	pass	91	2461.00	14	pass	131	2463.00	13.0	pass
12	2457.05	18	pass	52	2459.05	14.5	pass	92	2461.05	14	pass	132	2463.05	13.0	pass
13	2457.10	18	pass	53	2459.10	14.5	pass	93	2461.10	14	pass	133	2463.10	13.0	pass
14	2457.15	18	pass	54	2459.15	14.5	pass	94	2461.15	14	pass	134	2463.15	13.0	pass
15	2457.20	18	pass	55	2459.20	14.5	pass	95	2461.20	14	pass	135	2463.20	13.0	pass
16	2457.25	18	pass	56	2459.25	14.5	pass	96	2461.25	14	pass	136	2463.25	13.0	pass
17	2457.30	18	pass	57	2459.30	14.5	pass	97	2461.30	14	pass	137	2463.30	13.0	pass
18	2457.35	18	pass	58	2459.35	14.5	pass	98	2461.35	14	pass	138	2463.35	13.0	pass
19	2457.40	18	pass	59	2459.40	14.5	pass	99	2461.40	14	pass	139	2463.40	13.0	pass
20	2457.45	18	pass	60	2459.45	14.5	pass	100	2461.45	14	pass	140	2463.45	13.0	pass
21	2457.50	18	pass	61	2459.50	14.5	pass	101	2461.50	14	pass	141	2463.50	13.0	pass
22	2457.55	18	pass	62	2459.55	14.5	pass	102	2461.55	14	pass	142	2463.55	13.0	pass
23	2457.60	18	pass	63	2459.60	14.5	pass	103	2461.60	14	pass	143	2463.60	13.0	pass
24	2457.65	18	pass	64	2459.65	14.5	pass	104	2461.65	14	pass	144	2463.65	13.0	pass
25	2457.70	18	pass	65	2459.70	14.5	pass	105	2461.70	14	pass	145	2463.70	13.0	pass
26	2457.75	18	pass	66	2459.75	14.5	pass	106	2461.75	14	pass	146	2463.75	13.0	pass
27	2457.80	18	pass	67	2459.80	14.5	pass	107	2461.80	14	pass	147	2463.80	13.0	pass
28	2457.85	18	pass	68	2459.85	14.5	pass	108	2461.85	13.5	pass	148	2463.85	13.0	pass
29	2457.90	18	pass	69	2459.90	14	pass	109	2461.90	13.5	pass	149	2463.90	13.0	pass
30	2457.95	18	pass	70	2459.95	14	pass	110	2461.95	13.5	pass	150	2463.95	13.0	pass
31	2458.00	16	pass	71	2460.00	14	pass	111	2462.00	13.5	pass	151	2464.00	12.5	pass
32	2458.05	16	pass	72	2460.05	14	pass	112	2462.05	13.5	pass	152	2464.05	12.5	pass
33	2458.10	16	pass	73	2460.10	14	pass	113	2462.10	13.5	pass	153	2464.10	12.5	pass
34	2458.15	16	pass	74	2460.15	14	pass	114	2462.15	13.5	pass	154	2464.15	12.5	pass
35	2458.20	18	pass	75	2460.20	14	pass	115	2462.20	13.5	pass	155	2464.20	12.5	pass
36	2458.25	16	pass	76	2460.25	14	pass	116	2462.25	13.5	pass	156	2464.25	12.5	pass
37	2458.30	16	pass	77	2460.30	14	pass	117	2462.30	13.5	pass	157	2464.30	12.5	pass
38	2458.35	16	pass	78	2460.35	14	pass	118	2462.35	13.5	pass	158	2464.35	12.5	pass
39	2458.40	16	pass	79	2460.40	14	pass	119	2462.40	13.5	pass	159	2464.40	12.5	pass
40	2458.45	16	pass	80	2460.45	14	pass	120	2462.45	13.5	pass	160	2464.45	12.5	pass
drop 20% = 340 x 20% = 68 : therefore can drop 68 failures															

Tested February 2, 2000

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Jamming margin at 2 mb (part2)

processing gain by methode of jamming margin using BER tester											
radio conditions : supply voltage 5v, at room temp											
laster name : Brian Casto / Jim Friedmann											
Gp = S/N + Mj + Lsys; where S/N = 13 dB as per Wireless Information Networks by Pahlavan & Levesque; Lsys = 0.5dB											
input signal level = -30 dBm, jammer level = -31.5 dBm, then Mj = -1.5 dB											
Gp = 13.0 dB + -1.5 dB + 0.5 dB = 12.0 dB (worst case point)											
	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
161	2464.50	12.5	pass	206	2466.75	13	pass	251	2469.00	13.5	pass
162	2464.55	12.5	pass	207	2466.80	13	pass	252	2469.05	13.5	pass
163	2464.60	12.5	pass	208	2466.85	13	pass	253	2469.10	13.5	pass
164	2464.65	12.5	pass	209	2466.90	13	pass	254	2469.15	13.5	pass
165	2464.70	12.5	pass	210	2466.95	13	pass	255	2469.20	13.5	pass
166	2464.75	12.5	pass	211	2467.00	13	pass	256	2469.25	13.5	pass
167	2464.80	12.5	pass	212	2467.05	13	pass	257	2469.30	13.5	pass
168	2464.85	12.5	pass	213	2467.10	12.5	pass	258	2469.35	13.5	pass
169	2464.90	12.5	pass	214	2467.15	12.5	pass	259	2469.40	13.5	pass
170	2464.95	12.5	pass	215	2467.20	12.5	pass	260	2469.45	13.5	pass
171	2465.00	12.5	pass	216	2467.25	12.5	pass	261	2469.50	13.5	pass
172	2465.05	12.5	pass	217	2467.30	12.5	pass	262	2469.55	13.5	pass
173	2465.10	12.5	pass	218	2467.35	12.5	pass	263	2469.60	13.5	pass
174	2465.15	12.5	pass	219	2467.40	12.5	pass	264	2469.65	13.5	pass
175	2465.20	12	pass	220	2467.45	12.5	pass	265	2469.70	13.5	pass
176	2465.25	12	pass	221	2467.50	12.5	pass	266	2469.75	13.5	pass
177	2465.30	12	pass	222	2467.55	12.5	pass	267	2469.80	13.5	pass
178	2465.35	12	pass	223	2467.60	12.5	pass	268	2469.85	13.5	pass
179	2465.40	12	pass	224	2467.65	12.5	pass	269	2469.90	13.5	pass
180	2465.45	12	pass	225	2467.70	12.5	pass	270	2469.95	13.5	pass
181	2465.50	12	pass	226	2467.75	12.5	pass	271	2470.00	14	pass
182	2465.55	12	pass	227	2467.80	12.5	pass	272	2470.05	14	pass
183	2465.60	12	pass	228	2467.85	12.5	pass	273	2470.10	14	pass
184	2465.65	12	pass	229	2467.90	12.5	pass	274	2470.15	14	pass
185	2465.70	12	pass	230	2467.95	12.5	pass	275	2470.20	14	pass
186	2465.75	12	pass	231	2468.00	13.3	pass	276	2470.25	14	pass
187	2465.80	12	pass	232	2468.05	13.3	pass	277	2470.30	14	pass
188	2465.85	12	pass	233	2468.10	13.3	pass	278	2470.35	14	pass
189	2465.90	12	pass	234	2468.15	13.3	pass	279	2470.40	14	pass
190	2465.95	12	pass	235	2468.20	13.3	pass	280	2470.45	14	pass
191	2466.00	12	pass	236	2468.25	13.3	pass	281	2470.50	14	pass
192	2466.05	13	pass	237	2468.30	13.3	pass	282	2470.55	14	pass
193	2466.10	13	pass	238	2468.35	13.3	pass	283	2470.60	14	pass
194	2466.15	13	pass	239	2468.40	13.3	pass	284	2470.65	14	pass
195	2466.20	13	pass	240	2468.45	13.3	pass	285	2470.70	14	pass
196	2466.25	13	pass	241	2468.50	13.3	pass	286	2470.75	14	pass
197	2466.30	13	pass	242	2468.55	13.3	pass	287	2470.80	14	pass
198	2466.35	13	pass	243	2468.60	13.3	pass	288	2470.85	13	pass
199	2466.40	13	pass	244	2468.65	13.3	pass	289	2470.90	13	pass
200	2466.45	13	pass	245	2468.70	13.3	pass	290	2470.95	13	pass
201	2466.50	13	pass	246	2468.75	13.3	pass	291	2471.00	13	pass
202	2466.55	13	pass	247	2468.80	13.3	pass	292	2471.05	13	pass
203	2466.60	13	pass	248	2468.85	13.3	pass	293	2471.10	13	pass
204	2466.65	13	pass	249	2468.90	13.3	pass	294	2471.15	13	pass
205	2466.70	13	pass	250	2468.95	13.3	pass	295	2471.20	13	pass
206				251				296	2471.25	13.0	pass
207				252				297	2471.30	13.0	pass
208				253				298	2471.35	13.0	pass
209				254				299	2471.40	13.0	pass
210				255				300	2471.45	13.0	pass
211				256				301	2471.50	13.0	pass
212				257				302	2471.55	13.0	pass
213				258				303	2471.60	13.0	pass
214				259				304	2471.65	13.0	pass
215				260				305	2471.70	13.0	pass
216				261				306	2471.75	13.0	pass
217				262				307	2471.80	13.0	pass
218				263				308	2471.85	13.0	pass
219				264				309	2471.90	13.0	pass
220				265				310	2471.95	14.5	pass
221				266				311	2472.00	14.5	pass
222				267				312	2472.05	14.5	pass
223				268				313	2472.10	14.5	pass
224				269				314	2472.15	14.5	pass
225				270				315	2472.20	14.5	pass
226				271				316	2472.25	14.5	pass
227				272				317	2472.30	14.5	pass
228				273				318	2472.35	14.5	pass
229				274				319	2472.40	14.5	pass
230				275				320	2472.45	14.5	pass
231				276				321	2472.50	14.5	pass
232				277				322	2472.55	14.5	pass
233				278				323	2472.60	14.5	pass
234				279				324	2472.65	14.5	pass
235				280				325	2472.70	14.5	pass
236				281				326	2472.75	14.5	pass
237				282				327	2472.80	14.5	pass
238				283				328	2472.85	14.5	pass
239				284				329	2472.90	14.5	pass
240				285				330	2472.95	14.5	pass
241				286				331	2473.00	17	pass
242				287				332	2473.05	17	pass
243				288				333	2473.10	17	pass
244				289				334	2473.15	17	pass
245				290				335	2473.20	17	pass
246				291				336	2473.25	17	pass
247				292				337	2473.30	17	pass
248				293				338	2473.35	17	pass
249				294				339	2473.40	17	pass
250				295				340	2473.45	17	pass

Tested February 2, 2000

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Jamming margin at 1 mb (part1)

1/17/95

processing gain by methode of jamming margin using BER tester												
radio conditions : supply voltage 5v, at room temp, rx s/n = #40, tx s/n = #27												
tester name : Brian Casto / Jim Friedmann												
test date : 3/17/98		radio carrier freq= 2465										
Gp = S/N + Mj + Lsys; where S/N = 13 dB as per Wireless Information Networks by Pahlavan & Levesque; Lsys = 0dB												
input signal level = -30 dBm, jammer level = - 30.1 dBm, then Mj= -0.1 dB												
Gp = 13.0 dB + -0.1 dB = 12.9 dB (worst case point)												
jammer freq	Gp	pass (error rate under 1x10-5)	jammer freq	Gp	pass (error rate under 1x10-5)	jammer freq	Gp	pass (error rate under 1x10-5)	jammer freq	Gp	pass (error rate under 1x10-5)	
MHz	dB	pass / FAILURE	MHz	dB	pass / FAILURE	MHz	dB	pass / FAILURE	MHz	dB	pass / FAILURE	
1 2458.50	19	pass	41 2458.50	17	pass	81 2460.50	15	pass	121 2462.50	14	pass	
2 2458.55	19	pass	42 2458.55	17	pass	82 2460.55	15	pass	122 2462.55	14	pass	
3 2458.60	19	pass	43 2458.60	17	pass	83 2460.60	15	pass	123 2462.60	14	pass	
4 2458.65	19	pass	44 2458.65	17	pass	84 2460.65	15	pass	124 2462.65	14	pass	
5 2458.70	19	pass	45 2458.70	17	pass	85 2460.70	15	pass	125 2462.70	14	pass	
6 2458.75	19	pass	46 2458.75	17	pass	86 2460.75	15	pass	126 2462.75	14	pass	
7 2458.80	19	pass	47 2458.80	17	pass	87 2460.80	15	pass	127 2462.80	14	pass	
8 2458.85	19	pass	48 2458.85	17	pass	88 2460.85	15	pass	128 2462.85	14	pass	
9 2458.90	19	pass	49 2458.90	17	pass	89 2460.90	15	pass	129 2462.90	14	pass	
10 2458.95	19	pass	50 2458.95	17	pass	90 2460.95	15	pass	130 2462.95	14	pass	
11 2459.00	19	pass	51 2459.00	15	pass	91 2461.00	15	pass	131 2463.00	14	pass	
12 2459.05	19	pass	52 2459.05	15	pass	92 2461.05	15	pass	132 2463.05	14	pass	
13 2459.10	19	pass	53 2459.10	15	pass	93 2461.10	15	pass	133 2463.10	14	pass	
14 2459.15	19	pass	54 2459.15	15	pass	94 2461.15	15	pass	134 2463.15	14	pass	
15 2459.20	19	pass	55 2459.20	15	pass	95 2461.20	15	pass	135 2463.20	14	pass	
16 2459.25	19	pass	56 2459.25	15	pass	96 2461.25	15	pass	136 2463.25	14	pass	
17 2459.30	19	pass	57 2459.30	15	pass	97 2461.30	15	pass	137 2463.30	14	pass	
18 2459.35	19	pass	58 2459.35	15	pass	98 2461.35	15	pass	138 2463.35	14	pass	
19 2459.40	19	pass	59 2459.40	15	pass	99 2461.40	15	pass	139 2463.40	14	pass	
20 2459.45	19	pass	60 2459.45	15	pass	100 2461.45	15	pass	140 2463.45	14	pass	
21 2459.50	19	pass	61 2459.50	15	pass	101 2461.50	15	pass	141 2463.50	14	pass	
22 2459.55	19	pass	62 2459.55	15	pass	102 2461.55	15	pass	142 2463.55	14	pass	
23 2459.60	19	pass	63 2459.60	15	pass	103 2461.60	15	pass	143 2463.60	14	pass	
24 2459.65	19	pass	64 2459.65	15	pass	104 2461.65	15	pass	144 2463.65	14	pass	
25 2459.70	19	pass	65 2459.70	15	pass	105 2461.70	15	pass	145 2463.70	14	pass	
26 2459.75	19	pass	66 2459.75	15	pass	106 2461.75	15	pass	146 2463.75	14	pass	
27 2459.80	19	pass	67 2459.80	15	pass	107 2461.80	15	pass	147 2463.80	14	pass	
28 2459.85	19	pass	68 2459.85	15	pass	108 2461.85	15	pass	148 2463.85	14	pass	
29 2459.90	19	pass	69 2459.90	15	pass	109 2461.90	15	pass	149 2463.90	14	pass	
30 2459.95	19	pass	70 2459.95	15	pass	110 2461.95	15	pass	150 2463.95	14	pass	
31 2458.00	17	pass	71 2460.00	15	pass	111 2462.00	15	pass	151 2464.00	14	pass	
32 2458.05	17	pass	72 2460.05	15	pass	112 2462.05	15	pass	152 2464.05	14	pass	
33 2458.10	17	pass	73 2460.10	15	pass	113 2462.10	15	pass	153 2464.10	14	pass	
34 2458.15	17	pass	74 2460.15	15	pass	114 2462.15	15	pass	154 2464.15	14	pass	
35 2458.20	17	pass	75 2460.20	15	pass	115 2462.20	15	pass	155 2464.20	14	pass	
36 2458.25	17	pass	76 2460.25	15	pass	116 2462.25	15	pass	156 2464.25	14	pass	
37 2458.30	17	pass	77 2460.30	15	pass	117 2462.30	15	pass	157 2464.30	14	pass	
38 2458.35	17	pass	78 2460.35	15	pass	118 2462.35	15	pass	158 2464.35	14	pass	
39 2458.40	17	pass	79 2460.40	15	pass	119 2462.40	15	pass	159 2464.40	14	pass	
40 2458.45	17	pass	80 2460.45	15	pass	120 2462.45	15	pass	160 2464.45	14	pass	
drop 20% = 340 x 20% = 68 ; therefore can drop 68 failures												

Tested February 2, 2000

AIRNET CONFIDENTIAL

Jamming margin at 1 mb (part2)

2/7/98

processing gain by methode of jamming margin using BER tester															
radio conditions : supply voltage 5v, at room temp															
tester name : Brian Casto / Jim Friedmann															
Gp = S/N + Mj + Lsys; where S/N = 13 dB as per Wireless Information Networks by Pahlavan & Levesque; Lsys = 0dB															
input signal level = -30 dBm, jammer level = - 33.0 dBm, then Mj= -3.0 dB															
Gp = 13.0 dB + -0.1 dB = 12.9 dB (worst case point)															
	jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)		jammer freq	Gp	pass (error rate under 1x10-5)
	MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE		MHz	dB	pass / FAILURE
161	2464.50	13	pass	208	2468.75	14	pass	251	2469.00	14	pass	296	2471.25	14	pass
162	2464.55	13	pass	207	2468.80	14	pass	252	2469.05	14	pass	297	2471.30	14	pass
163	2464.60	13	pass	208	2468.85	14	pass	253	2469.10	14	pass	298	2471.35	14	pass
164	2464.65	13	pass	209	2468.90	14	pass	254	2469.15	14	pass	299	2471.40	14	pass
165	2464.70	12.9	pass	210	2468.95	14	pass	255	2469.20	14	pass	300	2471.45	14	pass
166	2464.75	12.9	pass	211	2469.00	14	pass	256	2469.25	14	pass	301	2471.50	14	pass
167	2464.80	12.9	pass	212	2469.05	14	pass	257	2469.30	14	pass	302	2471.55	14	pass
168	2464.85	13	pass	213	2467.10	14	pass	258	2469.35	14	pass	303	2471.60	14	pass
169	2464.90	13	pass	214	2467.15	14	pass	259	2469.40	14	pass	304	2471.65	14	pass
170	2464.95	13	pass	215	2467.20	14	pass	260	2469.45	14	pass	305	2471.70	14	pass
171	2465.00	13	pass	216	2467.25	14	pass	261	2469.50	14	pass	306	2471.75	14	pass
172	2465.05	13	pass	217	2467.30	14	pass	262	2469.55	14	pass	307	2471.80	14	pass
173	2465.10	13	pass	218	2467.35	14	pass	263	2469.60	14	pass	308	2471.85	14	pass
174	2465.15	13	pass	219	2467.40	14	pass	264	2469.65	14	pass	309	2471.90	14	pass
175	2465.20	13	pass	220	2467.45	14	pass	265	2469.70	14	pass	310	2471.95	14	pass
176	2465.25	14	pass	221	2467.50	14	pass	266	2469.75	14	pass	311	2472.00	15	pass
177	2465.30	14	pass	222	2467.55	14	pass	267	2469.80	14	pass	312	2472.05	15	pass
178	2465.35	14	pass	223	2467.60	14	pass	268	2469.85	14	pass	313	2472.10	15	pass
179	2465.40	14	pass	224	2467.65	14	pass	269	2469.90	14	pass	314	2472.15	15	pass
180	2465.45	14	pass	225	2467.70	14	pass	270	2469.95	14	pass	315	2472.20	15	pass
181	2465.50	14	pass	226	2467.75	14	pass	271	2470.00	14	pass	316	2472.25	15	pass
182	2465.55	14	pass	227	2467.80	14	pass	272	2470.05	14	pass	317	2472.30	15	pass
183	2465.60	14	pass	228	2467.85	14	pass	273	2470.10	14	pass	318	2472.35	15	pass
184	2465.65	14	pass	229	2467.90	14	pass	274	2470.15	14	pass	319	2472.40	15	pass
185	2465.70	14	pass	230	2467.95	14	pass	275	2470.20	14	pass	320	2472.45	15	pass
186	2465.75	14	pass	231	2468.00	14	pass	276	2470.25	14	pass	321	2472.50	15	pass
187	2465.80	15	pass	232	2468.05	14	pass	277	2470.30	14	pass	322	2472.55	15	pass
188	2465.85	15	pass	233	2468.10	14	pass	278	2470.35	14	pass	323	2472.60	15	pass
189	2465.90	15	pass	234	2468.15	14	pass	279	2470.40	14	pass	324	2472.65	15	pass
190	2465.95	15	pass	235	2468.20	14	pass	280	2470.45	14	pass	325	2472.70	15	pass
191	2466.00	15	pass	236	2468.25	14	pass	281	2470.50	14	pass	326	2472.75	15	pass
192	2466.05	15	pass	237	2468.30	14	pass	282	2470.55	14	pass	327	2472.80	15	pass
193	2466.10	15	pass	238	2468.35	14	pass	283	2470.60	14	pass	328	2472.85	15	pass
194	2466.15	15	pass	239	2468.40	14	pass	284	2470.65	14	pass	329	2472.90	15	pass
195	2466.20	15	pass	240	2468.45	14	pass	285	2470.70	14	pass	330	2472.95	15	pass
196	2466.25	15	pass	241	2468.50	14	pass	286	2470.75	14	pass	331	2473.00	18	pass
197	2466.30	15	pass	242	2468.55	14	pass	287	2470.80	14	pass	332	2473.05	18	pass
198	2466.35	15	pass	243	2468.60	14	pass	288	2470.85	14	pass	333	2473.10	18	pass
199	2466.40	15	pass	244	2468.65	14	pass	289	2470.90	14	pass	334	2473.15	18	pass
200	2466.45	15	pass	245	2468.70	14	pass	290	2470.95	14	pass	335	2473.20	18	pass
201	2466.50	15	pass	246	2468.75	14	pass	291	2471.00	14	pass	336	2473.25	18	pass
202	2466.55	15	pass	247	2468.80	14	pass	292	2471.05	14	pass	337	2473.30	18	pass
203	2466.60	15	pass	248	2468.85	14	pass	293	2471.10	14	pass	338	2473.35	18	pass
204	2466.65	15	pass	249	2468.90	14	pass	294	2471.15	14	pass	339	2473.40	18	pass
205	2466.70	15	pass	250	2468.95	14	pass	295	2471.20	14	pass	340	2473.45	18	pass