

# Measurement of Processing Gain of a Direct Sequence Spread Spectrum System

Certification Report on Compliance with Respect to FCC  
CFR 47, Paragraph 15.247(e)

Product: Samsung 2100N Wireless LAN Card

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## Scope

This report contains the results of the processing gain testing performed on the Samsung 2100N Wireless LAN Card. The tests were carried out in accordance with FCC CFR 47, Paragraph 15.247(e). The jamming margin method specified in 15.247(e)(2) was used to perform the processing gain testing. FCC 97-114, Guidance on Measurements for Direct Sequence Spread Spectrum Systems, was also utilized as a guiding document for the performance of the processing gain testing.

## FCC Requirements

The processing gain of a direct sequence system shall be at least 10dB. The processing gain shall be determined from the ratio in dB of the signal-to-noise ratio with the system spreading code turned off to the signal-to-noise ratio with the system spreading code turned on, as measured at the demodulated output of the receiver.

## Test Equipment

Hewlett Packard Spectrum Analyzer, Model 8566B, 100Hz-2.5GHz/2-22GHz  
Hewlett Packard Signal Generator, Model 8648C, 100kHz-3200MHz  
Weinschel Broadband Resistive Power Divider, Model 1515, DC to 18.0GHz 1 Watt  
Weinschel Directional Coupler, Model 1537RA-20, 0.5 to 4.0GHz  
Weinschel 6dB Attenuator (quantity 2), Model 2, 0 to 18GHz 5W  
IBM Laptop Computer, Model ThinkPad 600E (used with transmitter)  
IBM Laptop Computer, Model ThinkPad 600 (used with receiver)

## Method of Measurement

As mentioned in the scope section, the jamming margin method was used. The following drawing titled “Processing Gain – Jamming Test Setup” illustrates a block diagram of the test setup. In this method, a signal generator was stepped in 50kHz increments across the passband of the system. At each point, the level of the signal generator required to produce the recommended Bit Error Rate (BER) was recorded. This level is the jammer level. The output power of the transmitter was also recorded at these same points. This level is the signal level. The jammer to signal ratio (J/S) was then calculated. The worst 20% of the J/S data points were discarded. The lowest remaining J/S ratio was used to calculate the processing gain for each of the channels and rates investigated. The processing gain,  $G_p$ , was calculated as follows:  $G_p = (S/N)_o + M_j + L_{sys}$ , where  $G_p$  = the processing gain of the system,  $(S/N)_o$  = signal to noise ratio required for the chosen BER,  $M_j$  = J/S ratio, and  $L_{sys}$  = system losses. Note that total system losses in a system, including intentional radiator and receiver, are assumed to be no more than 2dB as specified by the FCC.

An ideal signal to noise ratio, also referred to as  $(S/N)_o$  or  $(E_s/N_o)$ , of 13.3dB was used as specified by Intersil when calculating the processing gain when operating at 2Mbps. A value of 16.4dB was used as specified by Intersil when calculating the processing gain when operating at 11Mbps. The Samsung 2100N contains chip-sets from Intersil and operates at rates up to

11Mbps. Please see the enclosed documents “Theoretical BER curves for the IEEE 1 and 2 Mbps modulations” and “Testing for compliance with FCC rules 15-247e” by Carl Andren of Intersil Corporation for more information.

A BER (bit error rate) of  $10^{-5}$  was used to calculate the processing gain. The monitoring software on the receiver side displays the FER (frame error rate). The use of 8% FER (or PER packet error rate) as a substitute for the recommended BER is derived in the attached document “Testing for compliance with FCC rules 15-247e” by Carl Andren of Intersil Corporation.

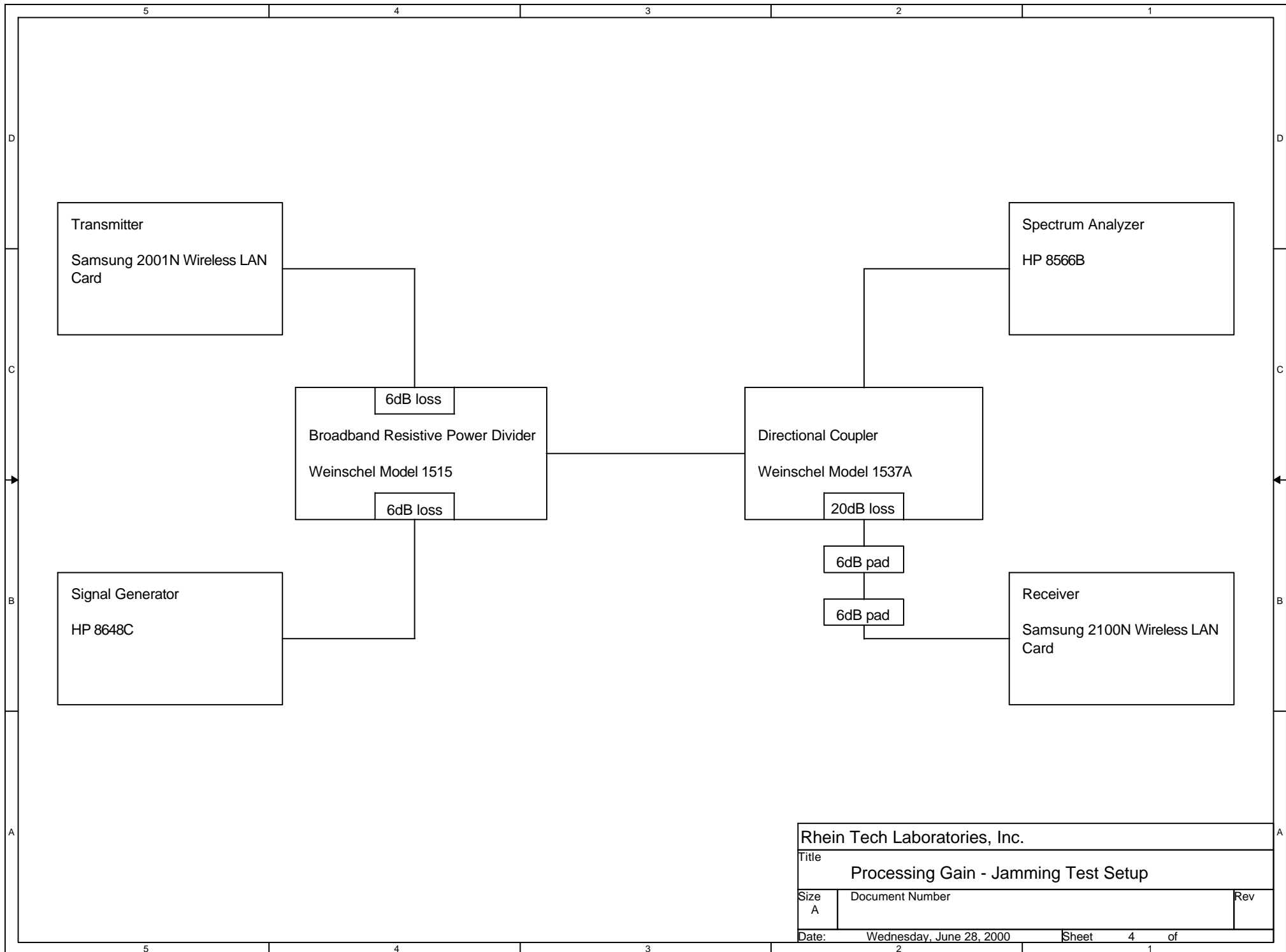
The data presented in this report is for the worst case operation of the EUT(s). All other data and chip/symbol rates were investigated and found to be in compliance.

## Engineering Summary

### Processing Gain Results Summary:

Channel	Rate (Mbps)	Gp(dB)
1	11	11.5
6	11	11.4
11	11	12.0
6	2	12.5

Following are the calculations and data for the three channels at 11Mbps and the one channel at 2Mbps that were investigated.



11Mbps Channel 1 Processing Gain							
Gp = (S/N)o + Mj + Lsys							
Freq.	Gp	(S/N)o	Mj = J/S	Lsys	Jammer	LVL	FER
(GHz)	(dB)	(dB)	(dB)	(dB)	(dBm)	(dBm)	
2.40350	20.0	16.4	1.6	2.0	-38.4	8.0	5.4
2.40355	19.5	16.4	1.1	2.0	-38.9	7.5	6.2
2.40360	19.4	16.4	1.0	2.0	-39.0	7.4	7.3
2.40365	19.0	16.4	0.6	2.0	-39.4	7.0	6.1
2.40370	18.9	16.4	0.5	2.0	-39.5	6.9	5.8
2.40375	18.8	16.4	0.4	2.0	-39.6	6.8	5.8
2.40380	18.9	16.4	0.5	2.0	-39.5	6.9	5.7
2.40385	18.9	16.4	0.5	2.0	-39.5	6.9	7.1
2.40390	19.0	16.4	0.6	2.0	-39.4	7.0	7.3
2.40395	19.1	16.4	0.7	2.0	-39.3	7.1	5.6
2.40400	19.5	16.4	1.1	2.0	-38.9	7.5	6.7
2.40405	19.8	16.4	1.4	2.0	-38.6	7.8	7.2
2.40410	19.6	16.4	1.2	2.0	-38.8	7.6	6.8
2.40415	19.5	16.4	1.1	2.0	-38.9	7.5	6.0
2.40420	19.6	16.4	1.2	2.0	-38.8	7.6	7.8
2.40425	19.4	16.4	1.0	2.0	-39.0	7.4	7.5
2.40430	19.3	16.4	0.9	2.0	-39.1	7.3	6.5
2.40435	19.3	16.4	0.9	2.0	-39.1	7.3	5.2
2.40440	19.2	16.4	0.8	2.0	-39.2	7.2	6.5
2.40445	19.1	16.4	0.7	2.0	-39.3	7.1	4.9
2.40450	19.0	16.4	0.6	2.0	-39.4	7.0	7.5
2.40455	18.6	16.4	0.2	2.0	-39.8	6.6	7.9
2.40460	18.5	16.4	0.1	2.0	-39.9	6.5	7.5
2.40465	18.1	16.4	-0.3	2.0	-40.3	6.1	5.7
2.40470	18.1	16.4	-0.3	2.0	-40.3	6.1	6.1
2.40475	18.0	16.4	-0.4	2.0	-40.4	6.0	5.2
2.40480	18.1	16.4	-0.3	2.0	-40.3	6.1	7.9
2.40485	18.0	16.4	-0.4	2.0	-40.4	6.0	4.9
2.40490	18.0	16.4	-0.4	2.0	-40.4	6.0	5.0
2.40495	18.2	16.4	-0.2	2.0	-40.2	6.2	7.1
2.40500	18.5	16.4	0.1	2.0	-39.9	6.5	7.9
2.40505	18.6	16.4	0.2	2.0	-39.8	6.6	7.7
2.40510	18.6	16.4	0.2	2.0	-39.8	6.6	8.0
2.40515	18.5	16.4	0.1	2.0	-39.9	6.5	6.2
2.40520	18.4	16.4	0.0	2.0	-40.0	6.4	6.4
2.40525	18.3	16.4	-0.1	2.0	-40.1	6.3	5.6
2.40530	18.3	16.4	-0.1	2.0	-40.1	6.3	6.2
2.40535	18.2	16.4	-0.2	2.0	-40.2	6.2	5.2
2.40540	18.2	16.4	-0.2	2.0	-40.2	6.2	6.6
2.40545	18.1	16.4	-0.3	2.0	-40.3	6.1	6.8
2.40550	17.8	16.4	-0.6	2.0	-40.6	5.8	6.5
2.40555	17.4	16.4	-1.0	2.0	-41.0	5.4	6.8
2.40560	17.2	16.4	-1.2	2.0	-41.2	5.2	6.7
2.40565	17.0	16.4	-1.4	2.0	-41.4	5.0	5.7
2.40570	16.9	16.4	-1.5	2.0	-41.5	4.9	6.9
2.40575	16.8	16.4	-1.6	2.0	-41.6	4.8	7.3
2.40580	16.7	16.4	-1.7	2.0	-41.7	4.7	6.1
2.40585	16.7	16.4	-1.7	2.0	-41.7	4.7	8.0

2.40590	16.6	16.4	-1.8	2.0	-41.8	4.6	7.0
2.40595	16.7	16.4	-1.7	2.0	-41.7	4.7	7.5
2.40600	16.7	16.4	-1.7	2.0	-41.7	4.7	5.8
2.40605	16.7	16.4	-1.7	2.0	-41.7	4.7	5.8
2.40610	16.7	16.4	-1.7	2.0	-41.7	4.7	7.9
2.40615	16.6	16.4	-1.8	2.0	-41.8	4.6	7.1
2.40620	16.4	16.4	-2.0	2.0	-42.0	4.4	5.9
2.40625	16.3	16.4	-2.1	2.0	-42.1	4.3	7.7
2.40630	16.0	16.4	-2.4	2.0	-42.4	4.0	5.3
2.40635	15.9	16.4	-2.5	2.0	-42.5	3.9	7.0
2.40640	15.7	16.4	-2.7	2.0	-42.7	3.7	6.2
2.40645	15.6	16.4	-2.8	2.0	-42.8	3.6	7.6
2.40650	15.4	16.4	-3.0	2.0	-43.0	3.4	6.4
2.40655	15.3	16.4	-3.1	2.0	-43.1	3.3	6.1
2.40660	15.3	16.4	-3.1	2.0	-43.1	3.3	7.2
2.40665	15.2	16.4	-3.2	2.0	-43.2	3.2	7.0
2.40670	15.2	16.4	-3.2	2.0	-43.2	3.2	7.3
2.40675	15.1	16.4	-3.3	2.0	-43.3	3.1	5.3
2.40680	15.1	16.4	-3.3	2.0	-43.3	3.1	6.2
2.40685	15.1	16.4	-3.3	2.0	-43.3	3.1	7.0
2.40690	15.0	16.4	-3.4	2.0	-43.4	3.0	8.0
2.40695	14.8	16.4	-3.6	2.0	-43.6	2.8	7.2
2.40700	14.7	16.4	-3.7	2.0	-43.7	2.7	7.8
2.40705	14.5	16.4	-3.9	2.0	-43.9	2.5	6.5
2.40710	14.4	16.4	-4.0	2.0	-44.0	2.4	6.5
2.40715	14.3	16.4	-4.1	2.0	-44.1	2.3	6.9
2.40720	14.2	16.4	-4.2	2.0	-44.2	2.2	7.3
2.40725	14.1	16.4	-4.3	2.0	-44.3	2.1	6.4
2.40730	14.1	16.4	-4.3	2.0	-44.3	2.1	7.8
2.40735	14.0	16.4	-4.4	2.0	-44.4	2.0	6.6
2.40740	14.0	16.4	-4.4	2.0	-44.4	2.0	8.0
2.40745	13.9	16.4	-4.5	2.0	-44.5	1.9	7.2
2.40750	13.8	16.4	-4.6	2.0	-44.6	1.8	6.3
2.40755	13.7	16.4	-4.7	2.0	-44.7	1.7	5.9
2.40760	13.6	16.4	-4.8	2.0	-44.8	1.6	6.9
2.40765	13.5	16.4	-4.9	2.0	-44.9	1.5	7.4
2.40770	13.4	16.4	-5.0	2.0	-45.0	1.4	8.0
2.40775	13.3	16.4	-5.1	2.0	-45.1	1.3	7.9
2.40780	13.2	16.4	-5.2	2.0	-45.2	1.2	7.6
2.40785	13.1	16.4	-5.3	2.0	-45.3	1.1	6.0
2.40790	13.1	16.4	-5.3	2.0	-45.3	1.1	6.6
2.40795	13.1	16.4	-5.3	2.0	-45.3	1.1	6.5
2.40800	13.1	16.4	-5.3	2.0	-45.3	1.1	6.8
2.40805	13.1	16.4	-5.3	2.0	-45.3	1.1	8.0
2.40810	13.1	16.4	-5.3	2.0	-45.3	1.1	6.5
2.40815	13.2	16.4	-5.2	2.0	-45.2	1.2	7.5
2.40820	13.1	16.4	-5.3	2.0	-45.3	1.1	8.0
2.40825	12.9	16.4	-5.5	2.0	-45.5	0.9	6.1
2.40830	12.7	16.4	-5.7	2.0	-45.7	0.7	5.2
2.40835	12.7	16.4	-5.7	2.0	-45.7	0.7	7.3
2.40840	12.5	16.4	-5.9	2.0	-45.9	0.5	6.7
2.40845	12.4	16.4	-6.0	2.0	-46.0	0.4	7.2

2.40850	12.4	16.4	-6.0	2.0	-46.0	0.4	8.0
2.40855	12.3	16.4	-6.1	2.0	-46.1	0.3	7.0
2.40860	12.3	16.4	-6.1	2.0	-46.1	0.3	5.1
2.40865	12.3	16.4	-6.1	2.0	-46.1	0.3	8.0
2.40870	12.2	16.4	-6.2	2.0	-46.2	0.2	6.2
2.40875	12.3	16.4	-6.1	2.0	-46.1	0.3	7.2
2.40880	12.2	16.4	-6.2	2.0	-46.2	0.2	6.9
2.40885	12.2	16.4	-6.2	2.0	-46.2	0.2	7.8
2.40890	12.0	16.4	-6.4	2.0	-46.4	0.0	7.3
2.40895	11.9	16.4	-6.5	2.0	-46.5	-0.1	7.6
2.40900	11.7	16.4	-6.7	2.0	-46.7	-0.3	6.9
2.40905	11.6	16.4	-6.8	2.0	-46.8	-0.4	7.9
2.40910	11.4	16.4	-7.0	2.0	-47.0	-0.6	6.6
2.40915	11.4	16.4	-7.0	2.0	-47.0	-0.6	8.0
2.40920	11.3	16.4	-7.1	2.0	-47.1	-0.7	7.9
2.40925	11.2	16.4	-7.2	2.0	-47.2	-0.8	6.8
2.40930	11.2	16.4	-7.2	2.0	-47.2	-0.8	7.0
2.40935	11.2	16.4	-7.2	2.0	-47.2	-0.8	7.0
2.40940	11.3	16.4	-7.1	2.0	-47.1	-0.7	7.7
2.40945	11.3	16.4	-7.1	2.0	-47.1	-0.7	6.9
2.40950	11.3	16.4	-7.1	2.0	-47.1	-0.7	6.3
2.40955	11.4	16.4	-7.0	2.0	-47.0	-0.6	6.9
2.40960	11.4	16.4	-7.0	2.0	-47.0	-0.6	7.4
2.40965	11.4	16.4	-7.0	2.0	-47.0	-0.6	7.3
2.40970	11.3	16.4	-7.1	2.0	-47.1	-0.7	6.7
2.40975	11.3	16.4	-7.1	2.0	-47.1	-0.7	8.0
2.40980	11.1	16.4	-7.3	2.0	-47.3	-0.9	6.7
2.40985	11.1	16.4	-7.3	2.0	-47.3	-0.9	7.6
2.40990	11.0	16.4	-7.4	2.0	-47.4	-1.0	6.5
2.40995	11.0	16.4	-7.4	2.0	-47.4	-1.0	7.4
2.41000	10.9	16.4	-7.5	2.0	-47.5	-1.1	6.1
2.41005	11.0	16.4	-7.4	2.0	-47.4	-1.0	8.0
2.41010	11.0	16.4	-7.4	2.0	-47.4	-1.0	6.6
2.41015	11.1	16.4	-7.3	2.0	-47.3	-0.9	7.6
2.41020	11.2	16.4	-7.2	2.0	-47.2	-0.8	7.7
2.41025	11.3	16.4	-7.1	2.0	-47.1	-0.7	7.5
2.41030	11.3	16.4	-7.1	2.0	-47.1	-0.7	6.3
2.41035	11.4	16.4	-7.0	2.0	-47.0	-0.6	8.0
2.41040	11.3	16.4	-7.1	2.0	-47.1	-0.7	6.4
2.41045	11.3	16.4	-7.1	2.0	-47.1	-0.7	6.5
2.41050	11.3	16.4	-7.1	2.0	-47.1	-0.7	7.2
2.41055	11.2	16.4	-7.2	2.0	-47.2	-0.8	6.5
2.41060	11.2	16.4	-7.2	2.0	-47.2	-0.8	6.6
2.41065	11.3	16.4	-7.1	2.0	-47.1	-0.7	7.8
2.41070	11.3	16.4	-7.1	2.0	-47.1	-0.7	7.0
2.41075	11.3	16.4	-7.1	2.0	-47.1	-0.7	6.0
2.41080	11.4	16.4	-7.0	2.0	-47.0	-0.6	6.2
2.41085	11.5	16.4	-6.9	2.0	-46.9	-0.5	6.5
2.41090	11.6	16.4	-6.8	2.0	-46.8	-0.4	6.9
2.41095	11.6	16.4	-6.8	2.0	-46.8	-0.4	6.7
2.41100	11.6	16.4	-6.8	2.0	-46.8	-0.4	7.8
2.41105	11.4	16.4	-7.0	2.0	-47.0	-0.6	7.2

2.41110	11.5	16.4	-6.9	2.0	-46.9	-0.5	7.0
2.41115	11.6	16.4	-6.8	2.0	-46.8	-0.4	7.4
2.41120	11.5	16.4	-6.9	2.0	-46.9	-0.5	6.3
2.41125	11.5	16.4	-6.9	2.0	-46.9	-0.5	6.6
2.41130	11.5	16.4	-6.9	2.0	-46.9	-0.5	6.9
2.41135	11.4	16.4	-7.0	2.0	-47.0	-0.6	6.1
2.41140	11.4	16.4	-7.0	2.0	-47.0	-0.6	6.0
2.41145	11.4	16.4	-7.0	2.0	-47.0	-0.6	6.7
2.41150	11.4	16.4	-7.0	2.0	-47.0	-0.6	7.3
2.41155	11.4	16.4	-7.0	2.0	-47.0	-0.6	6.6
2.41160	11.6	16.4	-6.8	2.0	-46.8	-0.4	7.7
2.41165	11.6	16.4	-6.8	2.0	-46.8	-0.4	6.6
2.41170	11.5	16.4	-6.9	2.0	-46.9	-0.5	6.0
2.41175	11.4	16.4	-7.0	2.0	-47.0	-0.6	6.8
2.41180	11.2	16.4	-7.2	2.0	-47.2	-0.8	5.8
2.41185	11.1	16.4	-7.3	2.0	-47.3	-0.9	7.1
2.41190	11.0	16.4	-7.4	2.0	-47.4	-1.0	5.6
2.41195	10.8	16.4	-7.6	2.0	-47.6	-1.2	6.0
2.41200	10.9	16.4	-7.5	2.0	-47.5	-1.1	6.1
2.41205	10.9	16.4	-7.5	2.0	-47.5	-1.1	4.0
2.41210	11.1	16.4	-7.3	2.0	-47.3	-0.9	3.5
2.41215	11.4	16.4	-7.0	2.0	-47.0	-0.6	6.5
2.41220	11.5	16.4	-6.9	2.0	-46.9	-0.5	5.4
2.41225	11.6	16.4	-6.8	2.0	-46.8	-0.4	7.5
2.41230	11.7	16.4	-6.7	2.0	-46.7	-0.3	4.5
2.41235	11.7	16.4	-6.7	2.0	-46.7	-0.3	7.2
2.41240	11.7	16.4	-6.7	2.0	-46.7	-0.3	6.7
2.41245	11.6	16.4	-6.8	2.0	-46.8	-0.4	5.9
2.41250	11.6	16.4	-6.8	2.0	-46.8	-0.4	6.6
2.41255	11.6	16.4	-6.8	2.0	-46.8	-0.4	6.2
2.41260	11.6	16.4	-6.8	2.0	-46.8	-0.4	5.5
2.41265	11.6	16.4	-6.8	2.0	-46.8	-0.4	5.6
2.41270	11.7	16.4	-6.7	2.0	-46.7	-0.3	7.0
2.41275	11.6	16.4	-6.8	2.0	-46.8	-0.4	7.3
2.41280	11.8	16.4	-6.6	2.0	-46.6	-0.2	7.0
2.41285	11.8	16.4	-6.6	2.0	-46.6	-0.2	7.1
2.41290	11.8	16.4	-6.6	2.0	-46.6	-0.2	6.3
2.41295	11.9	16.4	-6.5	2.0	-46.5	-0.1	7.7
2.41300	11.8	16.4	-6.6	2.0	-46.6	-0.2	5.9
2.41305	11.8	16.4	-6.6	2.0	-46.6	-0.2	6.5
2.41310	11.8	16.4	-6.6	2.0	-46.6	-0.2	7.5
2.41315	11.7	16.4	-6.7	2.0	-46.7	-0.3	6.3
2.41320	11.6	16.4	-6.8	2.0	-46.8	-0.4	7.6
2.41325	11.7	16.4	-6.7	2.0	-46.7	-0.3	7.0
2.41330	11.6	16.4	-6.8	2.0	-46.8	-0.4	6.8
2.41335	11.6	16.4	-6.8	2.0	-46.8	-0.4	8.0
2.41340	11.6	16.4	-6.8	2.0	-46.8	-0.4	7.9
2.41345	11.6	16.4	-6.8	2.0	-46.8	-0.4	7.5
2.41350	11.6	16.4	-6.8	2.0	-46.8	-0.4	7.1
2.41355	11.6	16.4	-6.8	2.0	-46.8	-0.4	6.7
2.41360	11.7	16.4	-6.7	2.0	-46.7	-0.3	7.8
2.41365	11.7	16.4	-6.7	2.0	-46.7	-0.3	7.1



2.41370	11.7	16.4	-6.7	2.0	-46.7	-0.3	6.9
2.41375	11.7	16.4	-6.7	2.0	-46.7	-0.3	7.3
2.41380	11.6	16.4	-6.8	2.0	-46.8	-0.4	7.0
2.41385	11.5	16.4	-6.9	2.0	-46.9	-0.5	6.4
2.41390	11.4	16.4	-7.0	2.0	-47.0	-0.6	7.5
2.41395	11.3	16.4	-7.1	2.0	-47.1	-0.7	7.5
2.41400	11.2	16.4	-7.2	2.0	-47.2	-0.8	6.3
2.41405	11.2	16.4	-7.2	2.0	-47.2	-0.8	6.9
2.41410	11.2	16.4	-7.2	2.0	-47.2	-0.8	6.4
2.41415	11.2	16.4	-7.2	2.0	-47.2	-0.8	6.0
2.41420	11.3	16.4	-7.1	2.0	-47.1	-0.7	6.6
2.41425	11.4	16.4	-7.0	2.0	-47.0	-0.6	6.7
2.41430	11.5	16.4	-6.9	2.0	-46.9	-0.5	7.5
2.41435	11.5	16.4	-6.9	2.0	-46.9	-0.5	6.3
2.41440	11.5	16.4	-6.9	2.0	-46.9	-0.5	6.5
2.41445	11.5	16.4	-6.9	2.0	-46.9	-0.5	7.4
2.41450	11.4	16.4	-7.0	2.0	-47.0	-0.6	6.6
2.41455	11.3	16.4	-7.1	2.0	-47.1	-0.7	6.2
2.41460	11.3	16.4	-7.1	2.0	-47.1	-0.7	6.5
2.41465	11.3	16.4	-7.1	2.0	-47.1	-0.7	7.3
2.41470	11.3	16.4	-7.1	2.0	-47.1	-0.7	7.3
2.41475	11.4	16.4	-7.0	2.0	-47.0	-0.6	7.1
2.41480	11.5	16.4	-6.9	2.0	-46.9	-0.5	7.7
2.41485	11.6	16.4	-6.8	2.0	-46.8	-0.4	7.5
2.41490	11.6	16.4	-6.8	2.0	-46.8	-0.4	6.0
2.41495	11.8	16.4	-6.6	2.0	-46.6	-0.2	6.5
2.41500	11.9	16.4	-6.5	2.0	-46.5	-0.1	7.2
2.41505	12.0	16.4	-6.4	2.0	-46.4	0.0	7.0
2.41510	12.1	16.4	-6.3	2.0	-46.3	0.1	6.5
2.41515	12.1	16.4	-6.3	2.0	-46.3	0.1	6.0
2.41520	12.1	16.4	-6.3	2.0	-46.3	0.1	6.4
2.41525	12.1	16.4	-6.3	2.0	-46.3	0.1	6.7
2.41530	12.1	16.4	-6.3	2.0	-46.3	0.1	6.5
2.41535	12.1	16.4	-6.3	2.0	-46.3	0.1	7.2
2.41540	12.1	16.4	-6.3	2.0	-46.3	0.1	6.8
2.41545	12.1	16.4	-6.3	2.0	-46.3	0.1	6.1
2.41550	12.1	16.4	-6.3	2.0	-46.3	0.1	5.3
2.41555	12.3	16.4	-6.1	2.0	-46.1	0.3	7.7
2.41560	12.4	16.4	-6.0	2.0	-46.0	0.4	7.4
2.41565	12.5	16.4	-5.9	2.0	-45.9	0.5	7.0
2.41570	12.6	16.4	-5.8	2.0	-45.8	0.6	5.9
2.41575	12.7	16.4	-5.7	2.0	-45.7	0.7	6.0
2.41580	12.8	16.4	-5.6	2.0	-45.6	0.8	6.9
2.41585	12.8	16.4	-5.6	2.0	-45.6	0.8	7.1
2.41590	12.8	16.4	-5.6	2.0	-45.6	0.8	6.8
2.41595	12.8	16.4	-5.6	2.0	-45.6	0.8	7.3
2.41600	12.8	16.4	-5.6	2.0	-45.6	0.8	7.7
2.41605	12.8	16.4	-5.6	2.0	-45.6	0.8	6.4
2.41610	12.9	16.4	-5.5	2.0	-45.5	0.9	8.0
2.41615	12.9	16.4	-5.5	2.0	-45.5	0.9	7.0
2.41620	13.0	16.4	-5.4	2.0	-45.4	1.0	7.0
2.41625	13.1	16.4	-5.3	2.0	-45.3	1.1	6.8

2.41630	13.2	16.4	-5.2	2.0	-45.2	1.2	6.3
2.41635	13.4	16.4	-5.0	2.0	-45.0	1.4	7.0
2.41640	13.6	16.4	-4.8	2.0	-44.8	1.6	8.0
2.41645	13.6	16.4	-4.8	2.0	-44.8	1.6	6.3
2.41650	13.6	16.4	-4.8	2.0	-44.8	1.6	5.4
2.41655	13.7	16.4	-4.7	2.0	-44.7	1.7	6.9
2.41660	13.7	16.4	-4.7	2.0	-44.7	1.7	7.2
2.41665	13.7	16.4	-4.7	2.0	-44.7	1.7	6.6
2.41670	13.7	16.4	-4.7	2.0	-44.7	1.7	6.5
2.41675	13.8	16.4	-4.6	2.0	-44.6	1.8	8.0
2.41680	13.8	16.4	-4.6	2.0	-44.6	1.8	6.3
2.41685	13.9	16.4	-4.5	2.0	-44.5	1.9	6.5
2.41690	14.0	16.4	-4.4	2.0	-44.4	2.0	6.2
2.41695	14.2	16.4	-4.2	2.0	-44.2	2.2	7.2
2.41700	14.2	16.4	-4.2	2.0	-44.2	2.2	4.6
2.41705	14.4	16.4	-4.0	2.0	-44.0	2.4	5.2
2.41710	14.6	16.4	-3.8	2.0	-43.8	2.6	5.9
2.41715	14.8	16.4	-3.6	2.0	-43.6	2.8	7.0
2.41720	14.9	16.4	-3.5	2.0	-43.5	2.9	7.7
2.41725	15.0	16.4	-3.4	2.0	-43.4	3.0	8.0
2.41730	15.0	16.4	-3.4	2.0	-43.4	3.0	7.6
2.41735	15.0	16.4	-3.4	2.0	-43.4	3.0	6.6
2.41740	15.1	16.4	-3.3	2.0	-43.3	3.1	6.7
2.41745	15.2	16.4	-3.2	2.0	-43.2	3.2	6.6
2.41750	15.4	16.4	-3.0	2.0	-43.0	3.4	7.5
2.41755	15.5	16.4	-2.9	2.0	-42.9	3.5	6.7
2.41760	15.7	16.4	-2.7	2.0	-42.7	3.7	6.4
2.41765	15.9	16.4	-2.5	2.0	-42.5	3.9	6.5
2.41770	16.1	16.4	-2.3	2.0	-42.3	4.1	6.3
2.41775	16.4	16.4	-2.0	2.0	-42.0	4.4	7.9
2.41780	16.6	16.4	-1.8	2.0	-41.8	4.6	6.7
2.41785	16.7	16.4	-1.7	2.0	-41.7	4.7	6.5
2.41790	16.8	16.4	-1.6	2.0	-41.6	4.8	7.3
2.41795	16.8	16.4	-1.6	2.0	-41.6	4.8	6.6
2.41800	16.9	16.4	-1.5	2.0	-41.5	4.9	7.4
2.41805	16.7	16.4	-1.7	2.0	-41.7	4.7	5.3
2.41810	16.7	16.4	-1.7	2.0	-41.7	4.7	6.7
2.41815	16.7	16.4	-1.7	2.0	-41.7	4.7	6.1
2.41820	16.7	16.4	-1.7	2.0	-41.7	4.7	6.1
2.41825	16.8	16.4	-1.6	2.0	-41.6	4.8	6.7
2.41830	16.9	16.4	-1.5	2.0	-41.5	4.9	6.8
2.41835	17.0	16.4	-1.4	2.0	-41.4	5.0	6.8
2.41840	17.2	16.4	-1.2	2.0	-41.2	5.2	8.0
2.41845	17.4	16.4	-1.0	2.0	-41.0	5.4	6.2
2.41850	17.8	16.4	-0.6	2.0	-40.6	5.8	6.6
2.41855	17.9	16.4	-0.5	2.0	-40.5	5.9	5.5
2.41860	18.1	16.4	-0.3	2.0	-40.3	6.1	7.7
2.41865	18.1	16.4	-0.3	2.0	-40.3	6.1	5.6
2.41870	18.1	16.4	-0.3	2.0	-40.3	6.1	5.8
2.41875	18.2	16.4	-0.2	2.0	-40.2	6.2	7.3
2.41880	18.3	16.4	-0.1	2.0	-40.1	6.3	8.0
2.41885	18.3	16.4	-0.1	2.0	-40.1	6.3	5.6

2.41890	18.3	16.4	-0.1	2.0	-40.1	6.3	6.3
2.41895	18.3	16.4	-0.1	2.0	-40.1	6.3	6.5
2.41900	18.2	16.4	-0.2	2.0	-40.2	6.2	6.5
2.41905	18.0	16.4	-0.4	2.0	-40.4	6.0	7.3
2.41910	17.9	16.4	-0.5	2.0	-40.5	5.9	7.5
2.41915	17.9	16.4	-0.5	2.0	-40.5	5.9	8.0
2.41920	17.8	16.4	-0.6	2.0	-40.6	5.8	7.0
2.41925	17.8	16.4	-0.6	2.0	-40.6	5.8	5.4
2.41930	17.9	16.4	-0.5	2.0	-40.5	5.9	7.6
2.41935	18.0	16.4	-0.4	2.0	-40.4	6.0	8.0
2.41940	18.1	16.4	-0.3	2.0	-40.3	6.1	6.5
2.41945	18.4	16.4	0.0	2.0	-40.0	6.4	5.5
2.41950	18.8	16.4	0.4	2.0	-39.6	6.8	6.7
2.41955	19.0	16.4	0.6	2.0	-39.4	7.0	7.3
2.41960	19.1	16.4	0.7	2.0	-39.3	7.1	7.0
2.41965	19.1	16.4	0.7	2.0	-39.3	7.1	5.2
2.41970	19.2	16.4	0.8	2.0	-39.2	7.2	7.3
2.41975	19.2	16.4	0.8	2.0	-39.2	7.2	5.6
2.41980	19.3	16.4	0.9	2.0	-39.1	7.3	6.4
2.41985	19.4	16.4	1.0	2.0	-39.0	7.4	7.7
2.41990	19.4	16.4	1.0	2.0	-39.0	7.4	7.1
2.41995	19.4	16.4	1.0	2.0	-39.0	7.4	5.7
2.42000	19.3	16.4	0.9	2.0	-39.1	7.3	6.0
2.42005	19.1	16.4	0.7	2.0	-39.3	7.1	7.7
2.42010	18.9	16.4	0.5	2.0	-39.5	6.9	6.5
2.42015	18.9	16.4	0.5	2.0	-39.5	6.9	7.9
2.42020	18.8	16.4	0.4	2.0	-39.6	6.8	5.5
2.42025	18.9	16.4	0.5	2.0	-39.5	6.9	7.7
2.42030	18.9	16.4	0.5	2.0	-39.5	6.9	5.3
2.42035	19.1	16.4	0.7	2.0	-39.3	7.1	7.8
2.42040	19.3	16.4	0.9	2.0	-39.1	7.3	7.3
2.42045	19.5	16.4	1.1	2.0	-38.9	7.5	6.6
2.42050	19.9	16.4	1.5	2.0	-38.5	7.9	5.0
Processing Gain (dB) @ 20th percentile =				11.5			
Test Conditions							
HWB3163-04 Rev A							
Tx Card = 9928-007 Rx Card = 9928-009							
Transmitter Signal Level at Rx= -40dBm							
Firmware = 0907 Rev 0.4+							
Mode = 11Mb , Pseudo IBSS							
PktSize = 1000 bytes							
PktDly = 1, PktBurst = 6							
Intersil Chip Versions on Card							
HFA3983 Rev A11							
HFA3683A RevC							
HFA3783 Rev D01							
HFA3861A							
HFA3841							

11Mbps Channel 6 Processing Gain							
Gp = (S/N)o +Mj + Lsys							
Freq.	Gp	(S/N)o	Mj = J/S	Lsys	Jammer	Lvl	FER
(GHz)	(dB)	(dB)	(dB)	(dB)	(dBm)	(dBm)	
2.42850	19.5	16.4	1.1	2.0	-38.9	5.2	6.6
2.42855	19.1	16.4	0.7	2.0	-39.3	4.8	7.7
2.42860	18.8	16.4	0.4	2.0	-39.6	4.5	8.0
2.42865	18.7	16.4	0.3	2.0	-39.7	4.4	6.8
2.42870	18.5	16.4	0.1	2.0	-39.9	4.2	6.0
2.42875	18.5	16.4	0.1	2.0	-39.9	4.2	6.3
2.42880	18.5	16.4	0.1	2.0	-39.9	4.2	6.1
2.42885	18.6	16.4	0.2	2.0	-39.8	4.3	6.9
2.42890	18.6	16.4	0.2	2.0	-39.8	4.3	5.2
2.42895	18.9	16.4	0.5	2.0	-39.5	4.6	7.4
2.42900	19.3	16.4	0.9	2.0	-39.1	5.0	7.7
2.42905	19.3	16.4	0.9	2.0	-39.1	5.0	7.6
2.42910	19.2	16.4	0.8	2.0	-39.2	4.9	5.8
2.42915	19.2	16.4	0.8	2.0	-39.2	4.9	7.5
2.42920	19.1	16.4	0.7	2.0	-39.3	4.8	6.4
2.42925	19.1	16.4	0.7	2.0	-39.3	4.8	7.1
2.42930	19.1	16.4	0.7	2.0	-39.3	4.8	7.9
2.42935	19.0	16.4	0.6	2.0	-39.4	4.7	7.8
2.42940	18.9	16.4	0.5	2.0	-39.5	4.6	7.5
2.42945	18.8	16.4	0.4	2.0	-39.6	4.5	7.2
2.42950	18.6	16.4	0.2	2.0	-39.8	4.3	7.8
2.42955	18.1	16.4	-0.3	2.0	-40.3	3.8	7.7
2.42960	17.9	16.4	-0.5	2.0	-40.5	3.6	5.6
2.42965	17.8	16.4	-0.6	2.0	-40.6	3.5	7.4
2.42970	17.8	16.4	-0.6	2.0	-40.6	3.5	7.7
2.42975	17.7	16.4	-0.7	2.0	-40.7	3.4	7.2
2.42980	17.7	16.4	-0.7	2.0	-40.7	3.4	6.0
2.42985	17.8	16.4	-0.6	2.0	-40.6	3.5	7.3
2.42990	17.8	16.4	-0.6	2.0	-40.6	3.5	7.3
2.42995	17.9	16.4	-0.5	2.0	-40.5	3.6	6.4
2.43000	18.2	16.4	-0.2	2.0	-40.2	3.9	7.3
2.43005	18.2	16.4	-0.2	2.0	-40.2	3.9	6.2
2.43010	18.2	16.4	-0.2	2.0	-40.2	3.9	6.0
2.43015	18.2	16.4	-0.2	2.0	-40.2	3.9	7.3
2.43020	18.1	16.4	-0.3	2.0	-40.3	3.8	5.6
2.43025	18.1	16.4	-0.3	2.0	-40.3	3.8	7.0
2.43030	18.0	16.4	-0.4	2.0	-40.4	3.7	6.0
2.43035	18.0	16.4	-0.4	2.0	-40.4	3.7	6.6
2.43040	17.9	16.4	-0.5	2.0	-40.5	3.6	5.6
2.43045	17.9	16.4	-0.5	2.0	-40.5	3.6	7.8
2.43050	17.6	16.4	-0.8	2.0	-40.8	3.3	7.6
2.43055	17.1	16.4	-1.3	2.0	-41.3	2.8	5.1
2.43060	16.9	16.4	-1.5	2.0	-41.5	2.6	5.6
2.43065	16.7	16.4	-1.7	2.0	-41.7	2.4	6.9
2.43070	16.6	16.4	-1.8	2.0	-41.8	2.3	7.3
2.43075	16.4	16.4	-2.0	2.0	-42.0	2.1	5.3
2.43080	16.4	16.4	-2.0	2.0	-42.0	2.1	6.6
2.43085	16.3	16.4	-2.1	2.0	-42.1	2.0	6.5

2.43090	16.3	16.4	-2.1	2.0	-42.1	2.0	6.3
2.43095	16.4	16.4	-2.0	2.0	-42.0	2.1	6.3
2.43100	16.5	16.4	-1.9	2.0	-41.9	2.2	7.6
2.43105	16.5	16.4	-1.9	2.0	-41.9	2.2	7.6
2.43110	16.4	16.4	-2.0	2.0	-42.0	2.1	7.0
2.43115	16.3	16.4	-2.1	2.0	-42.1	2.0	7.3
2.43120	16.2	16.4	-2.2	2.0	-42.2	1.9	7.9
2.43125	16.0	16.4	-2.4	2.0	-42.4	1.7	7.6
2.43130	15.8	16.4	-2.6	2.0	-42.6	1.5	7.4
2.43135	15.6	16.4	-2.8	2.0	-42.8	1.3	6.8
2.43140	15.5	16.4	-2.9	2.0	-42.9	1.2	7.3
2.43145	15.3	16.4	-3.1	2.0	-43.1	1.0	7.5
2.43150	15.2	16.4	-3.2	2.0	-43.2	0.9	7.7
2.43155	15.0	16.4	-3.4	2.0	-43.4	0.7	6.1
2.43160	15.0	16.4	-3.4	2.0	-43.4	0.7	7.1
2.43165	14.9	16.4	-3.5	2.0	-43.5	0.6	6.3
2.43170	14.9	16.4	-3.5	2.0	-43.5	0.6	6.8
2.43175	14.9	16.4	-3.5	2.0	-43.5	0.6	6.9
2.43180	14.9	16.4	-3.5	2.0	-43.5	0.6	7.3
2.43185	14.8	16.4	-3.6	2.0	-43.6	0.5	6.7
2.43190	14.7	16.4	-3.7	2.0	-43.7	0.4	6.9
2.43195	14.5	16.4	-3.9	2.0	-43.9	0.2	7.1
2.43200	14.4	16.4	-4.0	2.0	-44.0	0.1	7.9
2.43205	14.2	16.4	-4.2	2.0	-44.2	-0.1	6.7
2.43210	14.1	16.4	-4.3	2.0	-44.3	-0.2	6.8
2.43215	14.0	16.4	-4.4	2.0	-44.4	-0.3	6.7
2.43220	14.0	16.4	-4.4	2.0	-44.4	-0.3	7.5
2.43225	13.9	16.4	-4.5	2.0	-44.5	-0.4	7.5
2.43230	13.8	16.4	-4.6	2.0	-44.6	-0.5	6.1
2.43235	13.8	16.4	-4.6	2.0	-44.6	-0.5	7.0
2.43240	13.8	16.4	-4.6	2.0	-44.6	-0.5	7.4
2.43245	13.7	16.4	-4.7	2.0	-44.7	-0.6	6.8
2.43250	13.7	16.4	-4.7	2.0	-44.7	-0.6	7.6
2.43255	13.6	16.4	-4.8	2.0	-44.8	-0.7	7.8
2.43260	13.4	16.4	-5.0	2.0	-45.0	-0.9	6.7
2.43265	13.3	16.4	-5.1	2.0	-45.1	-1.0	7.7
2.43270	13.1	16.4	-5.3	2.0	-45.3	-1.2	6.5
2.43275	13.0	16.4	-5.4	2.0	-45.4	-1.3	6.6
2.43280	13.0	16.4	-5.4	2.0	-45.4	-1.3	7.6
2.43285	12.9	16.4	-5.5	2.0	-45.5	-1.4	6.4
2.43290	12.9	16.4	-5.5	2.0	-45.5	-1.4	7.3
2.43295	12.9	16.4	-5.5	2.0	-45.5	-1.4	7.0
2.43300	12.9	16.4	-5.5	2.0	-45.5	-1.4	6.9
2.43305	12.9	16.4	-5.5	2.0	-45.5	-1.4	7.2
2.43310	12.9	16.4	-5.5	2.0	-45.5	-1.4	6.0
2.43315	12.9	16.4	-5.5	2.0	-45.5	-1.4	6.3
2.43320	12.9	16.4	-5.5	2.0	-45.5	-1.4	6.7
2.43325	12.8	16.4	-5.6	2.0	-45.6	-1.5	6.9
2.43330	12.7	16.4	-5.7	2.0	-45.7	-1.6	7.1
2.43335	12.6	16.4	-5.8	2.0	-45.8	-1.7	7.9
2.43340	12.4	16.4	-6.0	2.0	-46.0	-1.9	6.5
2.43345	12.3	16.4	-6.1	2.0	-46.1	-2.0	7.5

2.43350	12.3	16.4	-6.1	2.0	-46.1	-2.0	8.0
2.43355	12.1	16.4	-6.3	2.0	-46.3	-2.2	6.4
2.43360	12.1	16.4	-6.3	2.0	-46.3	-2.2	6.7
2.43365	12.1	16.4	-6.3	2.0	-46.3	-2.2	7.1
2.43370	12.1	16.4	-6.3	2.0	-46.3	-2.2	7.2
2.43375	12.1	16.4	-6.3	2.0	-46.3	-2.2	7.5
2.43380	12.0	16.4	-6.4	2.0	-46.4	-2.3	6.6
2.43385	12.0	16.4	-6.4	2.0	-46.4	-2.3	8.0
2.43390	11.8	16.4	-6.6	2.0	-46.6	-2.5	6.1
2.43395	11.6	16.4	-6.8	2.0	-46.8	-2.7	5.7
2.43400	11.5	16.4	-6.9	2.0	-46.9	-2.8	7.0
2.43405	11.4	16.4	-7.0	2.0	-47.0	-2.9	7.8
2.43410	11.3	16.4	-7.1	2.0	-47.1	-3.0	7.7
2.43415	11.2	16.4	-7.2	2.0	-47.2	-3.1	7.4
2.43420	11.2	16.4	-7.2	2.0	-47.2	-3.1	8.0
2.43425	11.0	16.4	-7.4	2.0	-47.4	-3.3	6.1
2.43430	11.0	16.4	-7.4	2.0	-47.4	-3.3	6.5
2.43435	11.0	16.4	-7.4	2.0	-47.4	-3.3	6.7
2.43440	11.0	16.4	-7.4	2.0	-47.4	-3.3	6.1
2.43445	11.1	16.4	-7.3	2.0	-47.3	-3.2	6.2
2.43450	11.2	16.4	-7.2	2.0	-47.2	-3.1	7.0
2.43455	11.2	16.4	-7.2	2.0	-47.2	-3.1	6.1
2.43460	11.2	16.4	-7.2	2.0	-47.2	-3.1	5.7
2.43465	11.3	16.4	-7.1	2.0	-47.1	-3.0	6.4
2.43470	11.3	16.4	-7.1	2.0	-47.1	-3.0	7.4
2.43475	11.2	16.4	-7.2	2.0	-47.2	-3.1	7.0
2.43480	11.1	16.4	-7.3	2.0	-47.3	-3.2	6.9
2.43485	11.1	16.4	-7.3	2.0	-47.3	-3.2	7.8
2.43490	11.0	16.4	-7.4	2.0	-47.4	-3.3	7.4
2.43495	11.0	16.4	-7.4	2.0	-47.4	-3.3	6.7
2.43500	11.0	16.4	-7.4	2.0	-47.4	-3.3	6.7
2.43505	11.1	16.4	-7.3	2.0	-47.3	-3.2	8.0
2.43510	11.1	16.4	-7.3	2.0	-47.3	-3.2	7.1
2.43515	11.2	16.4	-7.2	2.0	-47.2	-3.1	7.3
2.43520	11.3	16.4	-7.1	2.0	-47.1	-3.0	7.7
2.43525	11.3	16.4	-7.1	2.0	-47.1	-3.0	6.0
2.43530	11.4	16.4	-7.0	2.0	-47.0	-2.9	7.7
2.43535	11.4	16.4	-7.0	2.0	-47.0	-2.9	7.8
2.43540	11.3	16.4	-7.1	2.0	-47.1	-3.0	7.1
2.43545	11.3	16.4	-7.1	2.0	-47.1	-3.0	7.3
2.43550	11.2	16.4	-7.2	2.0	-47.2	-3.1	6.5
2.43555	11.2	16.4	-7.2	2.0	-47.2	-3.1	6.4
2.43560	11.2	16.4	-7.2	2.0	-47.2	-3.1	6.1
2.43565	11.2	16.4	-7.2	2.0	-47.2	-3.1	6.0
2.43570	11.2	16.4	-7.2	2.0	-47.2	-3.1	6.5
2.43575	11.3	16.4	-7.1	2.0	-47.1	-3.0	7.1
2.43580	11.4	16.4	-7.0	2.0	-47.0	-2.9	7.4
2.43585	11.5	16.4	-6.9	2.0	-46.9	-2.8	7.2
2.43590	11.5	16.4	-6.9	2.0	-46.9	-2.8	7.1
2.43595	11.5	16.4	-6.9	2.0	-46.9	-2.8	6.2
2.43600	11.5	16.4	-6.9	2.0	-46.9	-2.8	6.4
2.43605	11.4	16.4	-7.0	2.0	-47.0	-2.9	7.3

2.43610	11.5	16.4	-6.9	2.0	-46.9	-2.8	7.9
2.43615	11.5	16.4	-6.9	2.0	-46.9	-2.8	7.0
2.43620	11.5	16.4	-6.9	2.0	-46.9	-2.8	7.1
2.43625	11.5	16.4	-6.9	2.0	-46.9	-2.8	7.5
2.43630	11.5	16.4	-6.9	2.0	-46.9	-2.8	8.0
2.43635	11.4	16.4	-7.0	2.0	-47.0	-2.9	7.2
2.43640	11.4	16.4	-7.0	2.0	-47.0	-2.9	6.7
2.43645	11.4	16.4	-7.0	2.0	-47.0	-2.9	6.3
2.43650	11.4	16.4	-7.0	2.0	-47.0	-2.9	6.5
2.43655	11.4	16.4	-7.0	2.0	-47.0	-2.9	6.9
2.43660	11.4	16.4	-7.0	2.0	-47.0	-2.9	6.7
2.43665	11.5	16.4	-6.9	2.0	-46.9	-2.8	7.7
2.43670	11.5	16.4	-6.9	2.0	-46.9	-2.8	6.3
2.43675	11.4	16.4	-7.0	2.0	-47.0	-2.9	6.7
2.43680	11.3	16.4	-7.1	2.0	-47.1	-3.0	7.7
2.43685	11.1	16.4	-7.3	2.0	-47.3	-3.2	6.4
2.43690	11.0	16.4	-7.4	2.0	-47.4	-3.3	6.6
2.43695	10.9	16.4	-7.5	2.0	-47.5	-3.4	6.5
2.43700	10.9	16.4	-7.5	2.0	-47.5	-3.4	5.6
2.43705	11.0	16.4	-7.4	2.0	-47.4	-3.3	8.0
2.43710	11.1	16.4	-7.3	2.0	-47.3	-3.2	7.2
2.43715	11.2	16.4	-7.2	2.0	-47.2	-3.1	5.5
2.43720	11.3	16.4	-7.1	2.0	-47.1	-3.0	5.3
2.43725	11.5	16.4	-6.9	2.0	-46.9	-2.8	6.6
2.43730	11.6	16.4	-6.8	2.0	-46.8	-2.7	6.3
2.43735	11.6	16.4	-6.8	2.0	-46.8	-2.7	6.1
2.43740	11.5	16.4	-6.9	2.0	-46.9	-2.8	5.8
2.43745	11.4	16.4	-7.0	2.0	-47.0	-2.9	5.6
2.43750	11.4	16.4	-7.0	2.0	-47.0	-2.9	6.3
2.43755	11.5	16.4	-6.9	2.0	-46.9	-2.8	7.8
2.43760	11.5	16.4	-6.9	2.0	-46.9	-2.8	7.1
2.43765	11.5	16.4	-6.9	2.0	-46.9	-2.8	5.6
2.43770	11.5	16.4	-6.9	2.0	-46.9	-2.8	6.0
2.43775	11.5	16.4	-6.9	2.0	-46.9	-2.8	7.9
2.43780	11.6	16.4	-6.8	2.0	-46.8	-2.7	6.4
2.43785	11.7	16.4	-6.7	2.0	-46.7	-2.6	7.2
2.43790	11.8	16.4	-6.6	2.0	-46.6	-2.5	6.6
2.43795	11.7	16.4	-6.7	2.0	-46.7	-2.6	7.4
2.43800	11.7	16.4	-6.7	2.0	-46.7	-2.6	7.9
2.43805	11.6	16.4	-6.8	2.0	-46.8	-2.7	6.2
2.43810	11.6	16.4	-6.8	2.0	-46.8	-2.7	7.6
2.43815	11.5	16.4	-6.9	2.0	-46.9	-2.8	6.4
2.43820	11.5	16.4	-6.9	2.0	-46.9	-2.8	7.5
2.43825	11.4	16.4	-7.0	2.0	-47.0	-2.9	6.6
2.43830	11.4	16.4	-7.0	2.0	-47.0	-2.9	7.7
2.43835	11.3	16.4	-7.1	2.0	-47.1	-3.0	6.8
2.43840	11.3	16.4	-7.1	2.0	-47.1	-3.0	7.2
2.43845	11.3	16.4	-7.1	2.0	-47.1	-3.0	6.7
2.43850	11.3	16.4	-7.1	2.0	-47.1	-3.0	6.3
2.43855	11.4	16.4	-7.0	2.0	-47.0	-2.9	7.8
2.43860	11.4	16.4	-7.0	2.0	-47.0	-2.9	6.2
2.43865	11.4	16.4	-7.0	2.0	-47.0	-2.9	6.8

2.43870	11.4	16.4	-7.0	2.0	-47.0	-2.9	6.5
2.43875	11.4	16.4	-7.0	2.0	-47.0	-2.9	6.9
2.43880	11.3	16.4	-7.1	2.0	-47.1	-3.0	6.7
2.43885	11.3	16.4	-7.1	2.0	-47.1	-3.0	8.0
2.43890	11.2	16.4	-7.2	2.0	-47.2	-3.1	7.7
2.43895	11.1	16.4	-7.3	2.0	-47.3	-3.2	7.1
2.43900	11.1	16.4	-7.3	2.0	-47.3	-3.2	7.8
2.43905	11.0	16.4	-7.4	2.0	-47.4	-3.3	6.5
2.43910	11.0	16.4	-7.4	2.0	-47.4	-3.3	7.8
2.43915	11.0	16.4	-7.4	2.0	-47.4	-3.3	7.8
2.43920	11.0	16.4	-7.4	2.0	-47.4	-3.3	6.7
2.43925	11.1	16.4	-7.3	2.0	-47.3	-3.2	6.8
2.43930	11.2	16.4	-7.2	2.0	-47.2	-3.1	7.4
2.43935	11.2	16.4	-7.2	2.0	-47.2	-3.1	6.5
2.43940	11.4	16.4	-7.0	2.0	-47.0	-2.9	6.5
2.43945	11.4	16.4	-7.0	2.0	-47.0	-2.9	6.5
2.43950	11.2	16.4	-7.2	2.0	-47.2	-3.1	6.5
2.43955	11.3	16.4	-7.1	2.0	-47.1	-3.0	6.6
2.43960	11.3	16.4	-7.1	2.0	-47.1	-3.0	7.1
2.43965	11.3	16.4	-7.1	2.0	-47.1	-3.0	8.0
2.43970	11.1	16.4	-7.3	2.0	-47.3	-3.2	7.8
2.43975	11.1	16.4	-7.3	2.0	-47.3	-3.2	7.0
2.43980	11.1	16.4	-7.3	2.0	-47.3	-3.2	6.9
2.43985	11.2	16.4	-7.2	2.0	-47.2	-3.1	6.5
2.43990	11.3	16.4	-7.1	2.0	-47.1	-3.0	6.2
2.43995	11.7	16.4	-6.7	2.0	-46.7	-2.6	6.1
2.44000	11.8	16.4	-6.6	2.0	-46.6	-2.5	6.8
2.44005	11.9	16.4	-6.5	2.0	-46.5	-2.4	6.2
2.44010	12.1	16.4	-6.3	2.0	-46.3	-2.2	7.5
2.44015	12.1	16.4	-6.3	2.0	-46.3	-2.2	7.0
2.44020	12.1	16.4	-6.3	2.0	-46.3	-2.2	6.7
2.44025	12.1	16.4	-6.3	2.0	-46.3	-2.2	6.7
2.44030	12.1	16.4	-6.3	2.0	-46.3	-2.2	6.5
2.44035	12.1	16.4	-6.3	2.0	-46.3	-2.2	7.0
2.44040	12.1	16.4	-6.3	2.0	-46.3	-2.2	6.9
2.44045	12.0	16.4	-6.4	2.0	-46.4	-2.3	6.0
2.44050	12.1	16.4	-6.3	2.0	-46.3	-2.2	6.6
2.44055	12.2	16.4	-6.2	2.0	-46.2	-2.1	6.1
2.44060	12.4	16.4	-6.0	2.0	-46.0	-1.9	8.0
2.44065	12.5	16.4	-5.9	2.0	-45.9	-1.8	6.3
2.44070	12.7	16.4	-5.7	2.0	-45.7	-1.6	7.3
2.44075	12.7	16.4	-5.7	2.0	-45.7	-1.6	5.8
2.44080	12.8	16.4	-5.6	2.0	-45.6	-1.5	7.2
2.44085	12.8	16.4	-5.6	2.0	-45.6	-1.5	7.3
2.44090	12.8	16.4	-5.6	2.0	-45.6	-1.5	7.3
2.44095	12.8	16.4	-5.6	2.0	-45.6	-1.5	7.3
2.44100	12.8	16.4	-5.6	2.0	-45.6	-1.5	7.0
2.44105	12.8	16.4	-5.6	2.0	-45.6	-1.5	7.2
2.44110	12.8	16.4	-5.6	2.0	-45.6	-1.5	6.3
2.44115	12.9	16.4	-5.5	2.0	-45.5	-1.4	6.9
2.44120	13.0	16.4	-5.4	2.0	-45.4	-1.3	7.2
2.44125	13.1	16.4	-5.3	2.0	-45.3	-1.2	6.7



2.44130	13.3	16.4	-5.1	2.0	-45.1	-1.0	7.6
2.44135	13.4	16.4	-5.0	2.0	-45.0	-0.9	6.8
2.44140	13.5	16.4	-4.9	2.0	-44.9	-0.8	6.6
2.44145	13.6	16.4	-4.8	2.0	-44.8	-0.7	6.2
2.44150	13.7	16.4	-4.7	2.0	-44.7	-0.6	7.0
2.44155	13.7	16.4	-4.7	2.0	-44.7	-0.6	6.4
2.44160	13.7	16.4	-4.7	2.0	-44.7	-0.6	6.3
2.44165	13.7	16.4	-4.7	2.0	-44.7	-0.6	5.7
2.44170	13.8	16.4	-4.6	2.0	-44.6	-0.5	7.3
2.44175	13.8	16.4	-4.6	2.0	-44.6	-0.5	6.3
2.44180	13.9	16.4	-4.5	2.0	-44.5	-0.4	6.9
2.44185	14.1	16.4	-4.3	2.0	-44.3	-0.2	7.8
2.44190	14.2	16.4	-4.2	2.0	-44.2	-0.1	7.1
2.44195	14.3	16.4	-4.1	2.0	-44.1	0.0	5.9
2.44200	14.5	16.4	-3.9	2.0	-43.9	0.2	6.6
2.44205	14.7	16.4	-3.7	2.0	-43.7	0.4	6.9
2.44210	14.8	16.4	-3.6	2.0	-43.6	0.5	5.7
2.44215	14.9	16.4	-3.5	2.0	-43.5	0.6	5.5
2.44220	15.0	16.4	-3.4	2.0	-43.4	0.7	5.5
2.44225	15.1	16.4	-3.3	2.0	-43.3	0.8	6.8
2.44230	15.1	16.4	-3.3	2.0	-43.3	0.8	6.5
2.44235	15.2	16.4	-3.2	2.0	-43.2	0.9	7.3
2.44240	15.2	16.4	-3.2	2.0	-43.2	0.9	6.7
2.44245	15.3	16.4	-3.1	2.0	-43.1	1.0	6.9
2.44250	15.4	16.4	-3.0	2.0	-43.0	1.1	6.0
2.44255	15.6	16.4	-2.8	2.0	-42.8	1.3	6.7
2.44260	15.8	16.4	-2.6	2.0	-42.6	1.5	7.0
2.44265	16.0	16.4	-2.4	2.0	-42.4	1.7	7.0
2.44270	16.2	16.4	-2.2	2.0	-42.2	1.9	6.7
2.44275	16.4	16.4	-2.0	2.0	-42.0	2.1	5.7
2.44280	16.7	16.4	-1.7	2.0	-41.7	2.4	8.0
2.44285	16.8	16.4	-1.6	2.0	-41.6	2.5	6.3
2.44290	16.9	16.4	-1.5	2.0	-41.5	2.6	7.0
2.44295	16.9	16.4	-1.5	2.0	-41.5	2.6	6.8
2.44300	17.0	16.4	-1.4	2.0	-41.4	2.7	7.2
2.44305	16.9	16.4	-1.5	2.0	-41.5	2.6	7.8
2.44310	16.8	16.4	-1.6	2.0	-41.6	2.5	6.7
2.44315	16.8	16.4	-1.6	2.0	-41.6	2.5	5.9
2.44320	16.9	16.4	-1.5	2.0	-41.5	2.6	7.3
2.44325	16.9	16.4	-1.5	2.0	-41.5	2.6	6.4
2.44330	17.0	16.4	-1.4	2.0	-41.4	2.7	6.3
2.44335	17.1	16.4	-1.3	2.0	-41.3	2.8	6.2
2.44340	17.4	16.4	-1.0	2.0	-41.0	3.1	7.1
2.44345	17.6	16.4	-0.8	2.0	-40.8	3.3	5.8
2.44350	18.0	16.4	-0.4	2.0	-40.4	3.7	6.0
2.44355	18.2	16.4	-0.2	2.0	-40.2	3.9	7.8
2.44360	18.2	16.4	-0.2	2.0	-40.2	3.9	6.6
2.44365	18.3	16.4	-0.1	2.0	-40.1	4.0	6.8
2.44370	18.3	16.4	-0.1	2.0	-40.1	4.0	6.5
2.44375	18.4	16.4	0.0	2.0	-40.0	4.1	7.1
2.44380	18.5	16.4	0.1	2.0	-39.9	4.2	7.0
2.44385	18.5	16.4	0.1	2.0	-39.9	4.2	6.7

2.44390	18.5	16.4	0.1	2.0	-39.9	4.2	8.0
2.44395	18.5	16.4	0.1	2.0	-39.9	4.2	6.8
2.44400	18.4	16.4	0.0	2.0	-40.0	4.1	8.0
2.44405	18.2	16.4	-0.2	2.0	-40.2	3.9	7.8
2.44410	18.1	16.4	-0.3	2.0	-40.3	3.8	7.9
2.44415	18.0	16.4	-0.4	2.0	-40.4	3.7	5.4
2.44420	18.0	16.4	-0.4	2.0	-40.4	3.7	6.1
2.44425	18.1	16.4	-0.3	2.0	-40.3	3.8	7.7
2.44430	18.1	16.4	-0.3	2.0	-40.3	3.8	6.8
2.44435	18.1	16.4	-0.3	2.0	-40.3	3.8	5.0
2.44440	18.4	16.4	0.0	2.0	-40.0	4.1	6.1
2.44445	18.7	16.4	0.3	2.0	-39.7	4.4	6.2
2.44450	19.0	16.4	0.6	2.0	-39.4	4.7	6.5
2.44455	19.2	16.4	0.8	2.0	-39.2	4.9	6.6
2.44460	19.3	16.4	0.9	2.0	-39.1	5.0	6.3
2.44465	19.3	16.4	0.9	2.0	-39.1	5.0	5.0
2.44470	19.4	16.4	1.0	2.0	-39.0	5.1	7.8
2.44475	19.5	16.4	1.1	2.0	-38.9	5.2	6.5
2.44480	19.5	16.4	1.1	2.0	-38.9	5.2	7.3
2.44485	19.5	16.4	1.1	2.0	-38.9	5.2	5.0
2.44490	19.6	16.4	1.2	2.0	-38.8	5.3	7.5
2.44495	19.6	16.4	1.2	2.0	-38.8	5.3	8.0
2.44500	19.5	16.4	1.1	2.0	-38.9	5.2	8.0
2.44505	19.2	16.4	0.8	2.0	-39.2	4.9	6.7
2.44510	19.2	16.4	0.8	2.0	-39.2	4.9	7.6
2.44515	19.0	16.4	0.6	2.0	-39.4	4.7	7.4
2.44520	19.0	16.4	0.6	2.0	-39.4	4.7	5.5
2.44525	19.0	16.4	0.6	2.0	-39.4	4.7	4.8
2.44530	19.1	16.4	0.7	2.0	-39.3	4.8	5.9
2.44535	19.3	16.4	0.9	2.0	-39.1	5.0	6.6
2.44540	19.5	16.4	1.1	2.0	-38.9	5.2	6.0
2.44545	19.9	16.4	1.5	2.0	-38.5	5.6	7.5
2.44550	20.3	16.4	1.9	2.0	-38.1	6.0	7.7
Processing Gain(dB) @ 20th Percentile =				11.4			
Test Conditions							
HWB3163-04 Rev A							
Tx Card = 9928-007 Rx Card = 9928-009							
Transmitter Signal Level at Rx = -40dBm							
Firmware = 0907 Rev 0.4+							
Mode = 11Mb , Pseudo IBSS							
PktSize = 1000 bytes							
PktDly = 1, PktBurst = 6							
Intersil Chip Versions on Card							
HFA3983 Rev A11							
HFA3683A RevC							
HFA3783 Rev D01							
HFA3861A							
HFA3841							

11Mbps Channel 11 Processing Gain							
Gp = (S/N)o +Mj +Lsys							
Freq.	Gp	(S/N)o	Mj = J/S	Lsys	Jammer	Lvl	FER
(GHz)	(dB)	(dB)	(dB)	(dB)	(dBm)	(dBm)	
2.45350	19.5	16.4	1.1	2.0	-38.9	2.9	7.7
2.45355	19.1	16.4	0.7	2.0	-39.3	2.5	7.4
2.45360	18.8	16.4	0.4	2.0	-39.6	2.2	6.9
2.45365	18.5	16.4	0.1	2.0	-39.9	1.9	5.3
2.45370	18.4	16.4	0.0	2.0	-40.0	1.8	6.0
2.45375	18.4	16.4	0.0	2.0	-40.0	1.8	7.2
2.45380	18.4	16.4	0.0	2.0	-40.0	1.8	6.8
2.45385	18.5	16.4	0.1	2.0	-39.9	1.9	7.4
2.45390	18.6	16.4	0.2	2.0	-39.8	2.0	7.0
2.45395	18.8	16.4	0.4	2.0	-39.6	2.2	6.6
2.45400	19.1	16.4	0.7	2.0	-39.3	2.5	7.1
2.45405	19.1	16.4	0.7	2.0	-39.3	2.5	5.7
2.45410	19.1	16.4	0.7	2.0	-39.3	2.5	6.4
2.45415	19.0	16.4	0.6	2.0	-39.4	2.4	5.0
2.45420	19.0	16.4	0.6	2.0	-39.4	2.4	7.5
2.45425	18.9	16.4	0.5	2.0	-39.5	2.3	5.4
2.45430	18.9	16.4	0.5	2.0	-39.5	2.3	6.8
2.45435	18.8	16.4	0.4	2.0	-39.6	2.2	5.0
2.45440	18.8	16.4	0.4	2.0	-39.6	2.2	6.4
2.45445	18.7	16.4	0.3	2.0	-39.7	2.1	6.4
2.45450	18.5	16.4	0.1	2.0	-39.9	1.9	6.1
2.45455	18.2	16.4	-0.2	2.0	-40.2	1.6	6.4
2.45460	17.9	16.4	-0.5	2.0	-40.5	1.3	5.7
2.45465	17.7	16.4	-0.7	2.0	-40.7	1.1	5.5
2.45470	17.7	16.4	-0.7	2.0	-40.7	1.1	6.4
2.45475	17.7	16.4	-0.7	2.0	-40.7	1.1	7.2
2.45480	17.7	16.4	-0.7	2.0	-40.7	1.1	7.0
2.45485	17.7	16.4	-0.7	2.0	-40.7	1.1	6.6
2.45490	17.8	16.4	-0.6	2.0	-40.6	1.2	6.4
2.45495	17.9	16.4	-0.5	2.0	-40.5	1.3	6.2
2.45500	18.1	16.4	-0.3	2.0	-40.3	1.5	5.6
2.45505	18.2	16.4	-0.2	2.0	-40.2	1.6	6.0
2.45510	18.2	16.4	-0.2	2.0	-40.2	1.6	6.5
2.45515	18.1	16.4	-0.3	2.0	-40.3	1.5	5.3
2.45520	18.0	16.4	-0.4	2.0	-40.4	1.4	5.2
2.45525	18.0	16.4	-0.4	2.0	-40.4	1.4	7.6
2.45530	17.9	16.4	-0.5	2.0	-40.5	1.3	5.2
2.45535	17.9	16.4	-0.5	2.0	-40.5	1.3	5.7
2.45540	17.9	16.4	-0.5	2.0	-40.5	1.3	6.3
2.45545	17.8	16.4	-0.6	2.0	-40.6	1.2	5.4
2.45550	17.7	16.4	-0.7	2.0	-40.7	1.1	7.4
2.45555	17.2	16.4	-1.2	2.0	-41.2	0.6	6.5
2.45560	16.9	16.4	-1.5	2.0	-41.5	0.3	5.9
2.45565	16.7	16.4	-1.7	2.0	-41.7	0.1	6.5
2.45570	16.6	16.4	-1.8	2.0	-41.8	0.0	7.3
2.45575	16.5	16.4	-1.9	2.0	-41.9	-0.1	7.2
2.45580	16.4	16.4	-2.0	2.0	-42.0	-0.2	6.9
2.45585	16.3	16.4	-2.1	2.0	-42.1	-0.3	5.1

2.45590	16.3	16.4	-2.1	2.0	-42.1	-0.3	5.4
2.45595	16.4	16.4	-2.0	2.0	-42.0	-0.2	6.1
2.45600	16.5	16.4	-1.9	2.0	-41.9	-0.1	7.6
2.45605	16.4	16.4	-2.0	2.0	-42.0	-0.2	5.7
2.45610	16.4	16.4	-2.0	2.0	-42.0	-0.2	6.4
2.45615	16.3	16.4	-2.1	2.0	-42.1	-0.3	6.7
2.45620	16.2	16.4	-2.2	2.0	-42.2	-0.4	7.5
2.45625	16.0	16.4	-2.4	2.0	-42.4	-0.6	7.1
2.45630	15.8	16.4	-2.6	2.0	-42.6	-0.8	6.3
2.45635	15.7	16.4	-2.7	2.0	-42.7	-0.9	7.0
2.45640	15.6	16.4	-2.8	2.0	-42.8	-1.0	7.4
2.45645	15.4	16.4	-3.0	2.0	-43.0	-1.2	6.6
2.45650	15.3	16.4	-3.1	2.0	-43.1	-1.3	7.4
2.45655	15.1	16.4	-3.3	2.0	-43.3	-1.5	5.6
2.45660	15.1	16.4	-3.3	2.0	-43.3	-1.5	6.5
2.45665	15.0	16.4	-3.4	2.0	-43.4	-1.6	6.0
2.45670	15.0	16.4	-3.4	2.0	-43.4	-1.6	6.6
2.45675	15.0	16.4	-3.4	2.0	-43.4	-1.6	6.4
2.45680	15.0	16.4	-3.4	2.0	-43.4	-1.6	6.7
2.45685	14.9	16.4	-3.5	2.0	-43.5	-1.7	6.1
2.45690	14.8	16.4	-3.6	2.0	-43.6	-1.8	6.2
2.45695	14.6	16.4	-3.8	2.0	-43.8	-2.0	6.0
2.45700	14.5	16.4	-3.9	2.0	-43.9	-2.1	6.2
2.45705	14.4	16.4	-4.0	2.0	-44.0	-2.2	7.0
2.45710	14.3	16.4	-4.1	2.0	-44.1	-2.3	7.7
2.45715	14.2	16.4	-4.2	2.0	-44.2	-2.4	7.6
2.45720	14.0	16.4	-4.4	2.0	-44.4	-2.6	5.2
2.45725	14.0	16.4	-4.4	2.0	-44.4	-2.6	6.8
2.45730	13.9	16.4	-4.5	2.0	-44.5	-2.7	6.0
2.45735	13.9	16.4	-4.5	2.0	-44.5	-2.7	6.9
2.45740	13.9	16.4	-4.5	2.0	-44.5	-2.7	7.3
2.45745	13.9	16.4	-4.5	2.0	-44.5	-2.7	8.0
2.45750	13.8	16.4	-4.6	2.0	-44.6	-2.8	7.3
2.45755	13.7	16.4	-4.7	2.0	-44.7	-2.9	7.4
2.45760	13.5	16.4	-4.9	2.0	-44.9	-3.1	6.5
2.45765	13.4	16.4	-5.0	2.0	-45.0	-3.2	7.1
2.45770	13.3	16.4	-5.1	2.0	-45.1	-3.3	7.5
2.45775	13.2	16.4	-5.2	2.0	-45.2	-3.4	7.6
2.45780	13.1	16.4	-5.3	2.0	-45.3	-3.5	6.4
2.45785	13.1	16.4	-5.3	2.0	-45.3	-3.5	7.1
2.45790	13.1	16.4	-5.3	2.0	-45.3	-3.5	7.7
2.45795	13.1	16.4	-5.3	2.0	-45.3	-3.5	7.4
2.45800	13.1	16.4	-5.3	2.0	-45.3	-3.5	7.4
2.45805	13.0	16.4	-5.4	2.0	-45.4	-3.6	6.4
2.45810	13.1	16.4	-5.3	2.0	-45.3	-3.5	7.1
2.45815	13.1	16.4	-5.3	2.0	-45.3	-3.5	7.0
2.45820	13.0	16.4	-5.4	2.0	-45.4	-3.6	6.3
2.45825	12.9	16.4	-5.5	2.0	-45.5	-3.7	5.9
2.45830	12.8	16.4	-5.6	2.0	-45.6	-3.8	6.5
2.45835	12.7	16.4	-5.7	2.0	-45.7	-3.9	7.6
2.45840	12.6	16.4	-5.8	2.0	-45.8	-4.0	7.5
2.45845	12.5	16.4	-5.9	2.0	-45.9	-4.1	7.5

2.45850	12.4	16.4	-6.0	2.0	-46.0	-4.2	7.0
2.45855	12.4	16.4	-6.0	2.0	-46.0	-4.2	7.4
2.45860	12.4	16.4	-6.0	2.0	-46.0	-4.2	7.6
2.45865	12.4	16.4	-6.0	2.0	-46.0	-4.2	7.4
2.45870	12.4	16.4	-6.0	2.0	-46.0	-4.2	7.4
2.45875	12.4	16.4	-6.0	2.0	-46.0	-4.2	6.0
2.45880	12.5	16.4	-5.9	2.0	-45.9	-4.1	8.0
2.45885	12.4	16.4	-6.0	2.0	-46.0	-4.2	6.3
2.45890	12.3	16.4	-6.1	2.0	-46.1	-4.3	6.8
2.45895	12.2	16.4	-6.2	2.0	-46.2	-4.4	6.5
2.45900	12.1	16.4	-6.3	2.0	-46.3	-4.5	7.1
2.45905	11.9	16.4	-6.5	2.0	-46.5	-4.7	6.4
2.45910	11.8	16.4	-6.6	2.0	-46.6	-4.8	6.0
2.45915	11.8	16.4	-6.6	2.0	-46.6	-4.8	7.3
2.45920	11.7	16.4	-6.7	2.0	-46.7	-4.9	7.0
2.45925	11.7	16.4	-6.7	2.0	-46.7	-4.9	7.6
2.45930	11.6	16.4	-6.8	2.0	-46.8	-5.0	6.0
2.45935	11.7	16.4	-6.7	2.0	-46.7	-4.9	7.5
2.45940	11.7	16.4	-6.7	2.0	-46.7	-4.9	7.0
2.45945	11.7	16.4	-6.7	2.0	-46.7	-4.9	6.2
2.45950	11.7	16.4	-6.7	2.0	-46.7	-4.9	5.8
2.45955	11.8	16.4	-6.6	2.0	-46.6	-4.8	7.1
2.45960	11.8	16.4	-6.6	2.0	-46.6	-4.8	6.5
2.45965	11.7	16.4	-6.7	2.0	-46.7	-4.9	5.9
2.45970	11.7	16.4	-6.7	2.0	-46.7	-4.9	7.6
2.45975	11.6	16.4	-6.8	2.0	-46.8	-5.0	8.0
2.45980	11.5	16.4	-6.9	2.0	-46.9	-5.1	7.1
2.45985	11.4	16.4	-7.0	2.0	-47.0	-5.2	7.5
2.45990	11.4	16.4	-7.0	2.0	-47.0	-5.2	8.0
2.45995	11.3	16.4	-7.1	2.0	-47.1	-5.3	7.0
2.46000	11.3	16.4	-7.1	2.0	-47.1	-5.3	6.6
2.46005	11.3	16.4	-7.1	2.0	-47.1	-5.3	6.6
2.46010	11.4	16.4	-7.0	2.0	-47.0	-5.2	7.1
2.46015	11.5	16.4	-6.9	2.0	-46.9	-5.1	7.1
2.46020	11.5	16.4	-6.9	2.0	-46.9	-5.1	6.0
2.46025	11.6	16.4	-6.8	2.0	-46.8	-5.0	6.4
2.46030	11.6	16.4	-6.8	2.0	-46.8	-5.0	6.0
2.46035	11.6	16.4	-6.8	2.0	-46.8	-5.0	6.8
2.46040	11.6	16.4	-6.8	2.0	-46.8	-5.0	7.2
2.46045	11.5	16.4	-6.9	2.0	-46.9	-5.1	6.6
2.46050	11.5	16.4	-6.9	2.0	-46.9	-5.1	7.2
2.46055	11.4	16.4	-7.0	2.0	-47.0	-5.2	6.6
2.46060	11.4	16.4	-7.0	2.0	-47.0	-5.2	7.1
2.46065	11.5	16.4	-6.9	2.0	-46.9	-5.1	8.0
2.46070	11.5	16.4	-6.9	2.0	-46.9	-5.1	6.7
2.46075	11.6	16.4	-6.8	2.0	-46.8	-5.0	7.8
2.46080	11.6	16.4	-6.8	2.0	-46.8	-5.0	6.0
2.46085	11.8	16.4	-6.6	2.0	-46.6	-4.8	7.7
2.46090	11.9	16.4	-6.5	2.0	-46.5	-4.7	7.6
2.46095	12.0	16.4	-6.4	2.0	-46.4	-4.6	7.9
2.46100	12.0	16.4	-6.4	2.0	-46.4	-4.6	7.8
2.46105	11.9	16.4	-6.5	2.0	-46.5	-4.7	8.0

2.46110	12.0	16.4	-6.4	2.0	-46.4	-4.6	7.7
2.46115	12.1	16.4	-6.3	2.0	-46.3	-4.5	7.4
2.46120	12.1	16.4	-6.3	2.0	-46.3	-4.5	6.8
2.46125	12.1	16.4	-6.3	2.0	-46.3	-4.5	6.5
2.46130	12.1	16.4	-6.3	2.0	-46.3	-4.5	7.0
2.46135	12.1	16.4	-6.3	2.0	-46.3	-4.5	6.5
2.46140	12.1	16.4	-6.3	2.0	-46.3	-4.5	6.5
2.46145	12.1	16.4	-6.3	2.0	-46.3	-4.5	6.0
2.46150	12.2	16.4	-6.2	2.0	-46.2	-4.4	7.8
2.46155	12.2	16.4	-6.2	2.0	-46.2	-4.4	6.8
2.46160	12.3	16.4	-6.1	2.0	-46.1	-4.3	6.8
2.46165	12.3	16.4	-6.1	2.0	-46.1	-4.3	5.4
2.46170	12.4	16.4	-6.0	2.0	-46.0	-4.2	7.1
2.46175	12.3	16.4	-6.1	2.0	-46.1	-4.3	5.8
2.46180	12.2	16.4	-6.2	2.0	-46.2	-4.4	6.5
2.46185	12.1	16.4	-6.3	2.0	-46.3	-4.5	7.0
2.46190	12.0	16.4	-6.4	2.0	-46.4	-4.6	6.2
2.46195	12.0	16.4	-6.4	2.0	-46.4	-4.6	7.0
2.46200	11.9	16.4	-6.5	2.0	-46.5	-4.7	6.2
2.46205	12.0	16.4	-6.4	2.0	-46.4	-4.6	7.0
2.46210	12.1	16.4	-6.3	2.0	-46.3	-4.5	7.0
2.46215	12.2	16.4	-6.2	2.0	-46.2	-4.4	6.6
2.46220	12.3	16.4	-6.1	2.0	-46.1	-4.3	5.8
2.46225	12.4	16.4	-6.0	2.0	-46.0	-4.2	5.2
2.46230	12.5	16.4	-5.9	2.0	-45.9	-4.1	7.3
2.46235	12.4	16.4	-6.0	2.0	-46.0	-4.2	5.5
2.46240	12.4	16.4	-6.0	2.0	-46.0	-4.2	7.3
2.46245	12.3	16.4	-6.1	2.0	-46.1	-4.3	6.2
2.46250	12.3	16.4	-6.1	2.0	-46.1	-4.3	6.4
2.46255	12.3	16.4	-6.1	2.0	-46.1	-4.3	6.5
2.46260	12.3	16.4	-6.1	2.0	-46.1	-4.3	7.2
2.46265	12.3	16.4	-6.1	2.0	-46.1	-4.3	7.8
2.46270	12.2	16.4	-6.2	2.0	-46.2	-4.4	6.3
2.46275	12.3	16.4	-6.1	2.0	-46.1	-4.3	7.1
2.46280	12.3	16.4	-6.1	2.0	-46.1	-4.3	7.9
2.46285	12.3	16.4	-6.1	2.0	-46.1	-4.3	7.5
2.46290	12.2	16.4	-6.2	2.0	-46.2	-4.4	6.6
2.46295	12.2	16.4	-6.2	2.0	-46.2	-4.4	6.7
2.46300	12.2	16.4	-6.2	2.0	-46.2	-4.4	7.8
2.46305	12.1	16.4	-6.3	2.0	-46.3	-4.5	7.2
2.46310	12.0	16.4	-6.4	2.0	-46.4	-4.6	6.5
2.46315	11.9	16.4	-6.5	2.0	-46.5	-4.7	5.6
2.46320	11.9	16.4	-6.5	2.0	-46.5	-4.7	7.5
2.46325	11.8	16.4	-6.6	2.0	-46.6	-4.8	6.3
2.46330	11.8	16.4	-6.6	2.0	-46.6	-4.8	6.8
2.46335	11.7	16.4	-6.7	2.0	-46.7	-4.9	5.9
2.46340	11.8	16.4	-6.6	2.0	-46.6	-4.8	7.0
2.46345	11.8	16.4	-6.6	2.0	-46.6	-4.8	7.5
2.46350	11.9	16.4	-6.5	2.0	-46.5	-4.7	8.2
2.46355	11.9	16.4	-6.5	2.0	-46.5	-4.7	7.2
2.46360	12.0	16.4	-6.4	2.0	-46.4	-4.6	7.4
2.46365	12.0	16.4	-6.4	2.0	-46.4	-4.6	6.8

2.46370	12.1	16.4	-6.3	2.0	-46.3	-4.5	7.9
2.46375	12.1	16.4	-6.3	2.0	-46.3	-4.5	8.0
2.46380	12.0	16.4	-6.4	2.0	-46.4	-4.6	6.8
2.46385	12.0	16.4	-6.4	2.0	-46.4	-4.6	7.6
2.46390	11.9	16.4	-6.5	2.0	-46.5	-4.7	7.0
2.46395	11.8	16.4	-6.6	2.0	-46.6	-4.8	6.9
2.46400	11.8	16.4	-6.6	2.0	-46.6	-4.8	7.5
2.46405	11.8	16.4	-6.6	2.0	-46.6	-4.8	7.8
2.46410	11.8	16.4	-6.6	2.0	-46.6	-4.8	7.6
2.46415	11.8	16.4	-6.6	2.0	-46.6	-4.8	6.6
2.46420	11.9	16.4	-6.5	2.0	-46.5	-4.7	7.2
2.46425	12.0	16.4	-6.4	2.0	-46.4	-4.6	7.4
2.46430	12.1	16.4	-6.3	2.0	-46.3	-4.5	7.2
2.46435	12.2	16.4	-6.2	2.0	-46.2	-4.4	7.4
2.46440	12.2	16.4	-6.2	2.0	-46.2	-4.4	6.8
2.46445	12.2	16.4	-6.2	2.0	-46.2	-4.4	6.2
2.46450	12.2	16.4	-6.2	2.0	-46.2	-4.4	7.9
2.46455	12.1	16.4	-6.3	2.0	-46.3	-4.5	6.8
2.46460	12.0	16.4	-6.4	2.0	-46.4	-4.6	6.1
2.46465	12.0	16.4	-6.4	2.0	-46.4	-4.6	6.3
2.46470	12.1	16.4	-6.3	2.0	-46.3	-4.5	7.4
2.46475	12.1	16.4	-6.3	2.0	-46.3	-4.5	6.1
2.46480	12.2	16.4	-6.2	2.0	-46.2	-4.4	7.0
2.46485	12.3	16.4	-6.1	2.0	-46.1	-4.3	7.5
2.46490	12.3	16.4	-6.1	2.0	-46.1	-4.3	5.9
2.46495	12.5	16.4	-5.9	2.0	-45.9	-4.1	7.5
2.46500	12.6	16.4	-5.8	2.0	-45.8	-4.0	6.8
2.46505	12.7	16.4	-5.7	2.0	-45.7	-3.9	6.9
2.46510	12.7	16.4	-5.7	2.0	-45.7	-3.9	5.8
2.46515	12.8	16.4	-5.6	2.0	-45.6	-3.8	7.6
2.46520	12.7	16.4	-5.7	2.0	-45.7	-3.9	6.2
2.46525	12.7	16.4	-5.7	2.0	-45.7	-3.9	7.0
2.46530	12.7	16.4	-5.7	2.0	-45.7	-3.9	7.1
2.46535	12.6	16.4	-5.8	2.0	-45.8	-4.0	5.9
2.46540	12.7	16.4	-5.7	2.0	-45.7	-3.9	7.7
2.46545	12.7	16.4	-5.7	2.0	-45.7	-3.9	8.0
2.46550	12.7	16.4	-5.7	2.0	-45.7	-3.9	6.2
2.46555	12.9	16.4	-5.5	2.0	-45.5	-3.7	8.0
2.46560	12.9	16.4	-5.5	2.0	-45.5	-3.7	6.2
2.46565	13.1	16.4	-5.3	2.0	-45.3	-3.5	7.0
2.46570	13.2	16.4	-5.2	2.0	-45.2	-3.4	6.8
2.46575	13.3	16.4	-5.1	2.0	-45.1	-3.3	6.5
2.46580	13.3	16.4	-5.1	2.0	-45.1	-3.3	5.7
2.46585	13.4	16.4	-5.0	2.0	-45.0	-3.2	7.1
2.46590	13.4	16.4	-5.0	2.0	-45.0	-3.2	7.1
2.46595	13.4	16.4	-5.0	2.0	-45.0	-3.2	7.4
2.46600	13.4	16.4	-5.0	2.0	-45.0	-3.2	7.7
2.46605	13.4	16.4	-5.0	2.0	-45.0	-3.2	7.5
2.46610	13.4	16.4	-5.0	2.0	-45.0	-3.2	6.7
2.46615	13.5	16.4	-4.9	2.0	-44.9	-3.1	7.2
2.46620	13.6	16.4	-4.8	2.0	-44.8	-3.0	7.3
2.46625	13.7	16.4	-4.7	2.0	-44.7	-2.9	7.0

2.46630	13.8	16.4	-4.6	2.0	-44.6	-2.8	5.9
2.46635	13.9	16.4	-4.5	2.0	-44.5	-2.7	5.0
2.46640	14.2	16.4	-4.2	2.0	-44.2	-2.4	8.0
2.46645	14.2	16.4	-4.2	2.0	-44.2	-2.4	5.8
2.46650	14.3	16.4	-4.1	2.0	-44.1	-2.3	6.5
2.46655	14.3	16.4	-4.1	2.0	-44.1	-2.3	5.8
2.46660	14.3	16.4	-4.1	2.0	-44.1	-2.3	6.0
2.46665	14.4	16.4	-4.0	2.0	-44.0	-2.2	7.7
2.46670	14.4	16.4	-4.0	2.0	-44.0	-2.2	7.2
2.46675	14.5	16.4	-3.9	2.0	-43.9	-2.1	7.8
2.46680	14.5	16.4	-3.9	2.0	-43.9	-2.1	7.0
2.46685	14.6	16.4	-3.8	2.0	-43.8	-2.0	6.5
2.46690	14.7	16.4	-3.7	2.0	-43.7	-1.9	6.0
2.46695	14.9	16.4	-3.5	2.0	-43.5	-1.7	7.6
2.46700	15.0	16.4	-3.4	2.0	-43.4	-1.6	6.0
2.46705	15.1	16.4	-3.3	2.0	-43.3	-1.5	5.0
2.46710	15.3	16.4	-3.1	2.0	-43.1	-1.3	5.5
2.46715	15.5	16.4	-2.9	2.0	-42.9	-1.1	6.4
2.46720	15.6	16.4	-2.8	2.0	-42.8	-1.0	7.1
2.46725	15.7	16.4	-2.7	2.0	-42.7	-0.9	8.0
2.46730	15.6	16.4	-2.8	2.0	-42.8	-1.0	5.7
2.46735	15.7	16.4	-2.7	2.0	-42.7	-0.9	6.7
2.46740	15.8	16.4	-2.6	2.0	-42.6	-0.8	6.4
2.46745	15.9	16.4	-2.5	2.0	-42.5	-0.7	6.6
2.46750	16.1	16.4	-2.3	2.0	-42.3	-0.5	8.0
2.46755	16.2	16.4	-2.2	2.0	-42.2	-0.4	6.3
2.46760	16.4	16.4	-2.0	2.0	-42.0	-0.2	6.5
2.46765	16.6	16.4	-1.8	2.0	-41.8	0.0	6.1
2.46770	16.8	16.4	-1.6	2.0	-41.6	0.2	5.6
2.46775	17.1	16.4	-1.3	2.0	-41.3	0.5	7.2
2.46780	17.3	16.4	-1.1	2.0	-41.1	0.7	6.5
2.46785	17.5	16.4	-0.9	2.0	-40.9	0.9	7.7
2.46790	17.5	16.4	-0.9	2.0	-40.9	0.9	6.1
2.46795	17.6	16.4	-0.8	2.0	-40.8	1.0	8.0
2.46800	17.7	16.4	-0.7	2.0	-40.7	1.1	7.3
2.46805	17.5	16.4	-0.9	2.0	-40.9	0.9	5.6
2.46810	17.4	16.4	-1.0	2.0	-41.0	0.8	5.1
2.46815	17.5	16.4	-0.9	2.0	-40.9	0.9	7.4
2.46820	17.5	16.4	-0.9	2.0	-40.9	0.9	6.9
2.46825	17.6	16.4	-0.8	2.0	-40.8	1.0	8.0
2.46830	17.7	16.4	-0.7	2.0	-40.7	1.1	7.9
2.46835	17.7	16.4	-0.7	2.0	-40.7	1.1	4.9
2.46840	18.0	16.4	-0.4	2.0	-40.4	1.4	5.6
2.46845	18.3	16.4	-0.1	2.0	-40.1	1.7	6.2
2.46850	18.7	16.4	0.3	2.0	-39.7	2.1	7.3
2.46855	18.9	16.4	0.5	2.0	-39.5	2.3	6.4
2.46860	18.9	16.4	0.5	2.0	-39.5	2.3	5.0
2.46865	19.0	16.4	0.6	2.0	-39.4	2.4	7.5
2.46870	18.9	16.4	0.5	2.0	-39.5	2.3	6.3
2.46875	19.0	16.4	0.6	2.0	-39.4	2.4	7.8
2.46880	19.1	16.4	0.7	2.0	-39.3	2.5	7.6
2.46885	19.1	16.4	0.7	2.0	-39.3	2.5	5.8



2.46890	19.1	16.4	0.7	2.0	-39.3	2.5	5.7
2.46895	19.1	16.4	0.7	2.0	-39.3	2.5	7.7
2.46900	19.1	16.4	0.7	2.0	-39.3	2.5	8.0
2.46905	18.9	16.4	0.5	2.0	-39.5	2.3	8.0
2.46910	18.7	16.4	0.3	2.0	-39.7	2.1	6.4
2.46915	18.6	16.4	0.2	2.0	-39.8	2.0	6.0
2.46920	18.6	16.4	0.2	2.0	-39.8	2.0	7.1
2.46925	18.6	16.4	0.2	2.0	-39.8	2.0	6.1
2.46930	18.6	16.4	0.2	2.0	-39.8	2.0	5.5
2.46935	18.8	16.4	0.4	2.0	-39.6	2.2	6.9
2.46940	19.0	16.4	0.6	2.0	-39.4	2.4	6.4
2.46945	19.3	16.4	0.9	2.0	-39.1	2.7	5.9
2.46950	19.6	16.4	1.2	2.0	-38.8	3.0	6.3
2.46955	19.8	16.4	1.4	2.0	-38.6	3.2	6.4
2.46960	19.9	16.4	1.5	2.0	-38.5	3.3	5.6
2.46965	20.0	16.4	1.6	2.0	-38.4	3.4	6.8
2.46970	20.0	16.4	1.6	2.0	-38.4	3.4	6.0
2.46975	20.1	16.4	1.7	2.0	-38.3	3.5	6.9
2.46980	20.1	16.4	1.7	2.0	-38.3	3.5	6.3
2.46985	20.2	16.4	1.8	2.0	-38.2	3.6	7.8
2.46990	20.2	16.4	1.8	2.0	-38.2	3.6	5.5
2.46995	20.2	16.4	1.8	2.0	-38.2	3.6	5.5
2.47000	20.1	16.4	1.7	2.0	-38.3	3.5	5.7
2.47005	20.0	16.4	1.6	2.0	-38.4	3.4	8.0
2.47010	19.8	16.4	1.4	2.0	-38.6	3.2	7.0
2.47015	19.7	16.4	1.3	2.0	-38.7	3.1	5.7
2.47020	19.7	16.4	1.3	2.0	-38.7	3.1	6.4
2.47025	19.7	16.4	1.3	2.0	-38.7	3.1	6.3
2.47030	19.8	16.4	1.4	2.0	-38.6	3.2	6.0
2.47035	20.0	16.4	1.6	2.0	-38.4	3.4	6.6
2.47040	20.3	16.4	1.9	2.0	-38.1	3.7	7.6
2.47045	20.5	16.4	2.1	2.0	-37.9	3.9	6.3
2.47050	20.8	16.4	2.4	2.0	-37.6	4.2	5.7
Processing Gain(dB) @ 20th Percentile =				12.0			
Test Conditions							
HWB3163-04 Rev A							
Tx Card = 9928-007 Rx Card = 9928-009							
Transmitter Signal Level at Rx = -40dBm							
Firmware = 0907 Rev 0.4+							
Mode = 11Mb , Pseudo IBSS							
PktSize = 1000 bytes							
PktDly = 1, PktBurst = 6							
Intersil Chip Versions on Card							
HFA3983 Rev A11							
HFA3683A RevC							
HFA3783 Rev D01							
HFA3861A							
HFA3841							

2Mbps Channel 6 Processing Gain							
Gp = (S/N)o + Mj + Lsys							
Freq.	Gp	(S/N)o	Mj = J/S	Lsys	Jammer	Lvl	FER
(GHz)	(dB)	(dB)	(dB)	(dB)	(dBm)	(dBm)	
2.42850	16.3	13.3	1.0	2.0	-39.0	4.7	6.6
2.42855	16.0	13.3	0.7	2.0	-39.3	4.4	7.2
2.42860	15.7	13.3	0.4	2.0	-39.6	4.1	6.8
2.42865	15.5	13.3	0.2	2.0	-39.8	3.9	6.5
2.42870	15.4	13.3	0.1	2.0	-39.9	3.8	8.0
2.42875	15.3	13.3	0.0	2.0	-40.0	3.7	7.3
2.42880	15.3	13.3	0.0	2.0	-40.0	3.7	6.5
2.42885	15.4	13.3	0.1	2.0	-39.9	3.8	6.7
2.42890	15.5	13.3	0.2	2.0	-39.8	3.9	6.3
2.42895	15.8	13.3	0.5	2.0	-39.5	4.2	7.5
2.42900	15.9	13.3	0.6	2.0	-39.4	4.3	6.6
2.42905	16.0	13.3	0.7	2.0	-39.3	4.4	7.1
2.42910	16.0	13.3	0.7	2.0	-39.3	4.4	7.4
2.42915	15.9	13.3	0.6	2.0	-39.4	4.3	6.2
2.42920	15.9	13.3	0.6	2.0	-39.4	4.3	8.1
2.42925	15.8	13.3	0.5	2.0	-39.5	4.2	5.7
2.42930	15.7	13.3	0.4	2.0	-39.6	4.1	5.0
2.42935	15.7	13.3	0.4	2.0	-39.6	4.1	6.3
2.42940	15.7	13.3	0.4	2.0	-39.6	4.1	8.1
2.42945	15.5	13.3	0.2	2.0	-39.8	3.9	7.0
2.42950	15.3	13.3	0.0	2.0	-40.0	3.7	5.5
2.42955	15.1	13.3	-0.2	2.0	-40.2	3.5	6.9
2.42960	14.8	13.3	-0.5	2.0	-40.5	3.2	6.5
2.42965	14.5	13.3	-0.8	2.0	-40.8	2.9	6.6
2.42970	14.5	13.3	-0.8	2.0	-40.8	2.9	6.2
2.42975	14.5	13.3	-0.8	2.0	-40.8	2.9	7.4
2.42980	14.5	13.3	-0.8	2.0	-40.8	2.9	7.3
2.42985	14.5	13.3	-0.8	2.0	-40.8	2.9	6.5
2.42990	14.5	13.3	-0.8	2.0	-40.8	2.9	6.0
2.42995	14.7	13.3	-0.6	2.0	-40.6	3.1	5.7
2.43000	14.9	13.3	-0.4	2.0	-40.4	3.3	6.3
2.43005	15.0	13.3	-0.3	2.0	-40.3	3.4	7.0
2.43010	14.9	13.3	-0.4	2.0	-40.4	3.3	5.4
2.43015	15.0	13.3	-0.3	2.0	-40.3	3.4	7.8
2.43020	14.8	13.3	-0.5	2.0	-40.5	3.2	5.6
2.43025	14.8	13.3	-0.5	2.0	-40.5	3.2	7.5
2.43030	14.7	13.3	-0.6	2.0	-40.6	3.1	6.3
2.43035	14.7	13.3	-0.6	2.0	-40.6	3.1	6.4
2.43040	14.7	13.3	-0.6	2.0	-40.6	3.1	7.6
2.43045	14.6	13.3	-0.7	2.0	-40.7	3.0	7.3
2.43050	14.3	13.3	-1.0	2.0	-41.0	2.7	5.1
2.43055	14.0	13.3	-1.3	2.0	-41.3	2.4	7.7
2.43060	13.6	13.3	-1.7	2.0	-41.7	2.0	5.6
2.43065	13.4	13.3	-1.9	2.0	-41.9	1.8	5.8
2.43070	13.3	13.3	-2.0	2.0	-42.0	1.7	6.8
2.43075	13.2	13.3	-2.1	2.0	-42.1	1.6	6.6
2.43080	13.2	13.3	-2.1	2.0	-42.1	1.6	8.1
2.43085	13.1	13.3	-2.2	2.0	-42.2	1.5	5.9

2.43090	13.2	13.3	-2.1	2.0	-42.1	1.6	7.9
2.43095	13.4	13.3	-1.9	2.0	-41.9	1.8	6.8
2.43100	13.8	13.3	-1.5	2.0	-41.5	2.2	6.7
2.43105	13.9	13.3	-1.4	2.0	-41.4	2.3	6.8
2.43110	14.0	13.3	-1.3	2.0	-41.3	2.4	6.6
2.43115	14.9	13.3	-0.4	2.0	-40.4	3.3	6.7
2.43120	15.0	13.3	-0.3	2.0	-40.3	3.4	6.4
2.43125	16.4	13.3	1.1	2.0	-38.9	4.8	6.4
2.43130	16.4	13.3	1.1	2.0	-38.9	4.8	7.5
2.43135	17.8	13.3	2.5	2.0	-37.5	6.2	5.4
2.43140	17.4	13.3	2.1	2.0	-37.9	5.8	5.3
2.43145	17.3	13.3	2.0	2.0	-38.0	5.7	4.9
2.43150	17.8	13.3	2.5	2.0	-37.5	6.2	5.6
2.43155	17.2	13.3	1.9	2.0	-38.1	5.6	4.4
2.43160	17.4	13.3	2.1	2.0	-37.9	5.8	6.0
2.43165	17.8	13.3	2.5	2.0	-37.5	6.2	5.0
2.43170	16.2	13.3	0.9	2.0	-39.1	4.6	4.5
2.43175	15.7	13.3	0.4	2.0	-39.6	4.1	6.3
2.43180	15.0	13.3	-0.3	2.0	-40.3	3.4	6.2
2.43185	14.5	13.3	-0.8	2.0	-40.8	2.9	7.3
2.43190	13.8	13.3	-1.5	2.0	-41.5	2.2	7.8
2.43195	13.6	13.3	-1.7	2.0	-41.7	2.0	5.6
2.43200	13.5	13.3	-1.8	2.0	-41.8	1.9	5.9
2.43205	13.1	13.3	-2.2	2.0	-42.2	1.5	6.4
2.43210	13.0	13.3	-2.3	2.0	-42.3	1.4	8.0
2.43215	12.9	13.3	-2.4	2.0	-42.4	1.3	7.0
2.43220	12.8	13.3	-2.5	2.0	-42.5	1.2	6.4
2.43225	12.8	13.3	-2.5	2.0	-42.5	1.2	6.6
2.43230	12.8	13.3	-2.5	2.0	-42.5	1.2	6.8
2.43235	12.8	13.3	-2.5	2.0	-42.5	1.2	6.1
2.43240	12.9	13.3	-2.4	2.0	-42.4	1.3	5.2
2.43245	13.1	13.3	-2.2	2.0	-42.2	1.5	6.8
2.43250	13.2	13.3	-2.1	2.0	-42.1	1.6	5.9
2.43255	13.2	13.3	-2.1	2.0	-42.1	1.6	5.4
2.43260	13.3	13.3	-2.0	2.0	-42.0	1.7	6.8
2.43265	13.3	13.3	-2.0	2.0	-42.0	1.7	6.1
2.43270	13.3	13.3	-2.0	2.0	-42.0	1.7	5.6
2.43275	13.4	13.3	-1.9	2.0	-41.9	1.8	7.5
2.43280	13.4	13.3	-1.9	2.0	-41.9	1.8	6.2
2.43285	13.4	13.3	-1.9	2.0	-41.9	1.8	8.1
2.43290	13.2	13.3	-2.1	2.0	-42.1	1.6	6.7
2.43295	13.2	13.3	-2.1	2.0	-42.1	1.6	7.4
2.43300	13.2	13.3	-2.1	2.0	-42.1	1.6	6.3
2.43305	13.0	13.3	-2.3	2.0	-42.3	1.4	7.7
2.43310	12.8	13.3	-2.5	2.0	-42.5	1.2	5.1
2.43315	12.8	13.3	-2.5	2.0	-42.5	1.2	6.2
2.43320	12.6	13.3	-2.7	2.0	-42.7	1.0	5.9
2.43325	12.7	13.3	-2.6	2.0	-42.6	1.1	7.5
2.43330	12.6	13.3	-2.7	2.0	-42.7	1.0	7.1
2.43335	12.6	13.3	-2.7	2.0	-42.7	1.0	7.9
2.43340	12.6	13.3	-2.7	2.0	-42.7	1.0	6.1
2.43345	12.8	13.3	-2.5	2.0	-42.5	1.2	7.0

2.43350	12.6	13.3	-2.7	2.0	-42.7	1.0	6.2
2.43355	12.9	13.3	-2.4	2.0	-42.4	1.3	6.0
2.43360	13.0	13.3	-2.3	2.0	-42.3	1.4	6.9
2.43365	13.0	13.3	-2.3	2.0	-42.3	1.4	6.0
2.43370	13.0	13.3	-2.3	2.0	-42.3	1.4	5.0
2.43375	13.0	13.3	-2.3	2.0	-42.3	1.4	5.3
2.43380	13.1	13.3	-2.2	2.0	-42.2	1.5	7.7
2.43385	12.8	13.3	-2.5	2.0	-42.5	1.2	5.7
2.43390	12.7	13.3	-2.6	2.0	-42.6	1.1	7.5
2.43395	12.8	13.3	-2.5	2.0	-42.5	1.2	6.5
2.43400	12.9	13.3	-2.4	2.0	-42.4	1.3	8.1
2.43405	12.6	13.3	-2.7	2.0	-42.7	1.0	7.1
2.43410	12.5	13.3	-2.8	2.0	-42.8	0.9	5.6
2.43415	12.6	13.3	-2.7	2.0	-42.7	1.0	7.9
2.43420	12.4	13.3	-2.9	2.0	-42.9	0.8	6.6
2.43425	12.5	13.3	-2.8	2.0	-42.8	0.9	7.4
2.43430	12.5	13.3	-2.8	2.0	-42.8	0.9	6.4
2.43435	12.4	13.3	-2.9	2.0	-42.9	0.8	6.7
2.43440	12.2	13.3	-3.1	2.0	-43.1	0.6	6.3
2.43445	12.6	13.3	-2.7	2.0	-42.7	1.0	7.5
2.43450	12.1	13.3	-3.2	2.0	-43.2	0.5	6.6
2.43455	12.7	13.3	-2.6	2.0	-42.6	1.1	5.7
2.43460	12.9	13.3	-2.4	2.0	-42.4	1.3	7.9
2.43465	13.0	13.3	-2.3	2.0	-42.3	1.4	6.5
2.43470	13.0	13.3	-2.3	2.0	-42.3	1.4	6.1
2.43475	12.9	13.3	-2.4	2.0	-42.4	1.3	5.1
2.43480	13.1	13.3	-2.2	2.0	-42.2	1.5	7.6
2.43485	12.4	13.3	-2.9	2.0	-42.9	0.8	7.1
2.43490	12.1	13.3	-3.2	2.0	-43.2	0.5	6.8
2.43495	12.6	13.3	-2.7	2.0	-42.7	1.0	6.5
2.43500	12.6	13.3	-2.7	2.0	-42.7	1.0	5.0
2.43505	12.5	13.3	-2.8	2.0	-42.8	0.9	6.3
2.43510	12.4	13.3	-2.9	2.0	-42.9	0.8	5.9
2.43515	12.4	13.3	-2.9	2.0	-42.9	0.8	7.8
2.43520	12.2	13.3	-3.1	2.0	-43.1	0.6	7.7
2.43525	12.2	13.3	-3.1	2.0	-43.1	0.6	5.7
2.43530	12.3	13.3	-3.0	2.0	-43.0	0.7	7.3
2.43535	11.9	13.3	-3.4	2.0	-43.4	0.3	6.4
2.43540	11.5	13.3	-3.8	2.0	-43.8	-0.1	6.0
2.43545	12.1	13.3	-3.2	2.0	-43.2	0.5	6.4
2.43550	11.5	13.3	-3.8	2.0	-43.8	-0.1	7.8
2.43555	12.4	13.3	-2.9	2.0	-42.9	0.8	5.5
2.43560	12.7	13.3	-2.6	2.0	-42.6	1.1	7.4
2.43565	12.9	13.3	-2.4	2.0	-42.4	1.3	8.1
2.43570	12.8	13.3	-2.5	2.0	-42.5	1.2	5.6
2.43575	12.8	13.3	-2.5	2.0	-42.5	1.2	7.6
2.43580	12.9	13.3	-2.4	2.0	-42.4	1.3	6.3
2.43585	12.1	13.3	-3.2	2.0	-43.2	0.5	7.3
2.43590	11.7	13.3	-3.6	2.0	-43.6	0.1	6.1
2.43595	12.4	13.3	-2.9	2.0	-42.9	0.8	5.5
2.43600	12.5	13.3	-2.8	2.0	-42.8	0.9	5.9
2.43605	12.5	13.3	-2.8	2.0	-42.8	0.9	6.2

2.43610	12.4	13.3	-2.9	2.0	-42.9	0.8	6.4
2.43615	12.4	13.3	-2.9	2.0	-42.9	0.8	6.3
2.43620	12.1	13.3	-3.2	2.0	-43.2	0.5	6.2
2.43625	12.1	13.3	-3.2	2.0	-43.2	0.5	6.5
2.43630	12.1	13.3	-3.2	2.0	-43.2	0.5	6.3
2.43635	11.5	13.3	-3.8	2.0	-43.8	-0.1	7.2
2.43640	11.1	13.3	-4.2	2.0	-44.2	-0.5	6.7
2.43645	11.7	13.3	-3.6	2.0	-43.6	0.1	6.4
2.43650	11.2	13.3	-4.1	2.0	-44.1	-0.4	7.2
2.43655	12.6	13.3	-2.7	2.0	-42.7	1.0	7.2
2.43660	13.1	13.3	-2.2	2.0	-42.2	1.5	7.0
2.43665	13.7	13.3	-1.6	2.0	-41.6	2.1	6.6
2.43670	14.1	13.3	-1.2	2.0	-41.2	2.5	7.0
2.43675	15.1	13.3	-0.2	2.0	-40.2	3.5	7.3
2.43680	15.7	13.3	0.4	2.0	-39.6	4.1	5.9
2.43685	16.2	13.3	0.9	2.0	-39.1	4.6	7.4
2.43690	16.1	13.3	0.8	2.0	-39.2	4.5	5.9
2.43695	16.3	13.3	1.0	2.0	-39.0	4.7	5.8
2.43700	16.6	13.3	1.3	2.0	-38.7	5.0	6.9
2.43705	16.3	13.3	1.0	2.0	-39.0	4.7	6.6
2.43710	16.3	13.3	1.0	2.0	-39.0	4.7	7.3
2.43715	16.0	13.3	0.7	2.0	-39.3	4.4	7.7
2.43720	15.5	13.3	0.2	2.0	-39.8	3.9	7.7
2.43725	14.8	13.3	-0.5	2.0	-40.5	3.2	7.0
2.43730	14.0	13.3	-1.3	2.0	-41.3	2.4	6.1
2.43735	13.5	13.3	-1.8	2.0	-41.8	1.9	7.9
2.43740	12.7	13.3	-2.6	2.0	-42.6	1.1	6.9
2.43745	12.6	13.3	-2.7	2.0	-42.7	1.0	6.7
2.43750	11.6	13.3	-3.7	2.0	-43.7	0.0	7.1
2.43755	12.1	13.3	-3.2	2.0	-43.2	0.5	5.6
2.43760	12.1	13.3	-3.2	2.0	-43.2	0.5	6.5
2.43765	12.1	13.3	-3.2	2.0	-43.2	0.5	5.3
2.43770	12.0	13.3	-3.3	2.0	-43.3	0.4	6.9
2.43775	11.7	13.3	-3.6	2.0	-43.6	0.1	7.1
2.43780	12.0	13.3	-3.3	2.0	-43.3	0.4	6.8
2.43785	11.1	13.3	-4.2	2.0	-44.2	-0.5	7.1
2.43790	11.2	13.3	-4.1	2.0	-44.1	-0.4	8.0
2.43795	12.1	13.3	-3.2	2.0	-43.2	0.5	7.5
2.43800	12.5	13.3	-2.8	2.0	-42.8	0.9	7.0
2.43805	12.7	13.3	-2.6	2.0	-42.6	1.1	6.3
2.43810	12.8	13.3	-2.5	2.0	-42.5	1.2	7.9
2.43815	12.9	13.3	-2.4	2.0	-42.4	1.3	4.9
2.43820	12.9	13.3	-2.4	2.0	-42.4	1.3	8.0
2.43825	12.9	13.3	-2.4	2.0	-42.4	1.3	7.6
2.43830	12.8	13.3	-2.5	2.0	-42.5	1.2	5.1
2.43835	12.6	13.3	-2.7	2.0	-42.7	1.0	7.5
2.43840	12.0	13.3	-3.3	2.0	-43.3	0.4	6.8
2.43845	12.4	13.3	-2.9	2.0	-42.9	0.8	6.3
2.43850	11.7	13.3	-3.6	2.0	-43.6	0.1	8.0
2.43855	12.3	13.3	-3.0	2.0	-43.0	0.7	6.8
2.43860	12.3	13.3	-3.0	2.0	-43.0	0.7	7.9
2.43865	12.3	13.3	-3.0	2.0	-43.0	0.7	7.2

2.43870	12.2	13.3	-3.1	2.0	-43.1	0.6	5.5
2.43875	12.0	13.3	-3.3	2.0	-43.3	0.4	6.6
2.43880	12.3	13.3	-3.0	2.0	-43.0	0.7	6.5
2.43885	11.6	13.3	-3.7	2.0	-43.7	0.0	6.7
2.43890	11.6	13.3	-3.7	2.0	-43.7	0.0	7.3
2.43895	12.4	13.3	-2.9	2.0	-42.9	0.8	7.5
2.43900	12.7	13.3	-2.6	2.0	-42.6	1.1	8.1
2.43905	12.7	13.3	-2.6	2.0	-42.6	1.1	6.8
2.43910	12.8	13.3	-2.5	2.0	-42.5	1.2	7.3
2.43915	12.9	13.3	-2.4	2.0	-42.4	1.3	6.0
2.43920	12.8	13.3	-2.5	2.0	-42.5	1.2	6.2
2.43925	12.9	13.3	-2.4	2.0	-42.4	1.3	7.5
2.43930	12.8	13.3	-2.5	2.0	-42.5	1.2	5.2
2.43935	12.6	13.3	-2.7	2.0	-42.7	1.0	6.0
2.43940	12.3	13.3	-3.0	2.0	-43.0	0.7	6.7
2.43945	12.5	13.3	-2.8	2.0	-42.8	0.9	7.0
2.43950	12.0	13.3	-3.3	2.0	-43.3	0.4	7.7
2.43955	12.4	13.3	-2.9	2.0	-42.9	0.8	7.0
2.43960	12.3	13.3	-3.0	2.0	-43.0	0.7	7.4
2.43965	12.3	13.3	-3.0	2.0	-43.0	0.7	6.5
2.43970	12.2	13.3	-3.1	2.0	-43.1	0.6	5.8
2.43975	12.1	13.3	-3.2	2.0	-43.2	0.5	5.6
2.43980	12.3	13.3	-3.0	2.0	-43.0	0.7	5.7
2.43985	12.0	13.3	-3.3	2.0	-43.3	0.4	7.3
2.43990	12.0	13.3	-3.3	2.0	-43.3	0.4	7.0
2.43995	12.4	13.3	-2.9	2.0	-42.9	0.8	6.1
2.44000	12.7	13.3	-2.6	2.0	-42.6	1.1	7.5
2.44005	12.6	13.3	-2.7	2.0	-42.7	1.0	6.6
2.44010	12.7	13.3	-2.6	2.0	-42.6	1.1	7.2
2.44015	12.8	13.3	-2.5	2.0	-42.5	1.2	6.9
2.44020	12.7	13.3	-2.6	2.0	-42.6	1.1	5.3
2.44025	12.8	13.3	-2.5	2.0	-42.5	1.2	6.7
2.44030	12.8	13.3	-2.5	2.0	-42.5	1.2	6.8
2.44035	12.8	13.3	-2.5	2.0	-42.5	1.2	6.9
2.44040	12.6	13.3	-2.7	2.0	-42.7	1.0	5.1
2.44045	12.7	13.3	-2.6	2.0	-42.6	1.1	6.5
2.44050	12.5	13.3	-2.8	2.0	-42.8	0.9	7.3
2.44055	12.5	13.3	-2.8	2.0	-42.8	0.9	5.6
2.44060	12.5	13.3	-2.8	2.0	-42.8	0.9	7.2
2.44065	12.4	13.3	-2.9	2.0	-42.9	0.8	6.7
2.44070	12.5	13.3	-2.8	2.0	-42.8	0.9	7.4
2.44075	12.5	13.3	-2.8	2.0	-42.8	0.9	7.5
2.44080	12.6	13.3	-2.7	2.0	-42.7	1.0	6.5
2.44085	12.6	13.3	-2.7	2.0	-42.7	1.0	7.9
2.44090	12.6	13.3	-2.7	2.0	-42.7	1.0	7.0
2.44095	12.8	13.3	-2.5	2.0	-42.5	1.2	6.9
2.44100	13.1	13.3	-2.2	2.0	-42.2	1.5	7.8
2.44105	13.1	13.3	-2.2	2.0	-42.2	1.5	7.2
2.44110	13.1	13.3	-2.2	2.0	-42.2	1.5	4.7
2.44115	13.3	13.3	-2.0	2.0	-42.0	1.7	7.3
2.44120	13.3	13.3	-2.0	2.0	-42.0	1.7	6.7
2.44125	13.4	13.3	-1.9	2.0	-41.9	1.8	8.1

2.44130	13.3	13.3	-2.0	2.0	-42.0	1.7	6.3
2.44135	13.4	13.3	-1.9	2.0	-41.9	1.8	7.8
2.44140	13.3	13.3	-2.0	2.0	-42.0	1.7	5.8
2.44145	13.3	13.3	-2.0	2.0	-42.0	1.7	6.2
2.44150	13.2	13.3	-2.1	2.0	-42.1	1.6	5.7
2.44155	13.1	13.3	-2.2	2.0	-42.2	1.5	7.6
2.44160	12.9	13.3	-2.4	2.0	-42.4	1.3	6.1
2.44165	12.8	13.3	-2.5	2.0	-42.5	1.2	7.0
2.44170	12.7	13.3	-2.6	2.0	-42.6	1.1	6.1
2.44175	12.7	13.3	-2.6	2.0	-42.6	1.1	7.0
2.44180	12.7	13.3	-2.6	2.0	-42.6	1.1	6.0
2.44185	12.7	13.3	-2.6	2.0	-42.6	1.1	7.3
2.44190	12.7	13.3	-2.6	2.0	-42.6	1.1	6.1
2.44195	13.0	13.3	-2.3	2.0	-42.3	1.4	7.5
2.44200	13.4	13.3	-1.9	2.0	-41.9	1.8	6.6
2.44205	13.5	13.3	-1.8	2.0	-41.8	1.9	6.0
2.44210	13.8	13.3	-1.5	2.0	-41.5	2.2	6.9
2.44215	14.6	13.3	-0.7	2.0	-40.7	3.0	7.0
2.44220	14.9	13.3	-0.4	2.0	-40.4	3.3	7.5
2.44225	16.3	13.3	1.0	2.0	-39.0	4.7	8.1
2.44230	16.3	13.3	1.0	2.0	-39.0	4.7	7.7
2.44235	17.7	13.3	2.4	2.0	-37.6	6.1	5.8
2.44240	17.4	13.3	2.1	2.0	-37.9	5.8	4.8
2.44245	17.5	13.3	2.2	2.0	-37.8	5.9	7.1
2.44250	19.1	13.3	3.8	2.0	-36.2	7.5	4.9
2.44255	19.4	13.3	4.1	2.0	-35.9	7.8	4.4
2.44260	17.7	13.3	2.4	2.0	-37.6	6.1	4.5
2.44265	18.2	13.3	2.9	2.0	-37.1	6.6	6.0
2.44270	16.7	13.3	1.4	2.0	-38.6	5.1	7.0
2.44275	16.2	13.3	0.9	2.0	-39.1	4.6	7.2
2.44280	15.5	13.3	0.2	2.0	-39.8	3.9	5.5
2.44285	15.0	13.3	-0.3	2.0	-40.3	3.4	6.1
2.44290	14.3	13.3	-1.0	2.0	-41.0	2.7	6.2
2.44295	14.3	13.3	-1.0	2.0	-41.0	2.7	5.5
2.44300	14.1	13.3	-1.2	2.0	-41.2	2.5	6.6
2.44305	13.7	13.3	-1.6	2.0	-41.6	2.1	7.0
2.44310	13.5	13.3	-1.8	2.0	-41.8	1.9	6.3
2.44315	13.5	13.3	-1.8	2.0	-41.8	1.9	6.7
2.44320	13.5	13.3	-1.8	2.0	-41.8	1.9	7.8
2.44325	13.5	13.3	-1.8	2.0	-41.8	1.9	6.6
2.44330	13.6	13.3	-1.7	2.0	-41.7	2.0	6.5
2.44335	13.7	13.3	-1.6	2.0	-41.6	2.1	5.4
2.44340	14.0	13.3	-1.3	2.0	-41.3	2.4	5.8
2.44345	14.3	13.3	-1.0	2.0	-41.0	2.7	6.6
2.44350	14.6	13.3	-0.7	2.0	-40.7	3.0	5.6
2.44355	14.8	13.3	-0.5	2.0	-40.5	3.2	5.6
2.44360	15.0	13.3	-0.3	2.0	-40.3	3.4	7.8
2.44365	15.0	13.3	-0.3	2.0	-40.3	3.4	6.7
2.44370	15.0	13.3	-0.3	2.0	-40.3	3.4	6.3
2.44375	15.0	13.3	-0.3	2.0	-40.3	3.4	5.2
2.44380	15.1	13.3	-0.2	2.0	-40.2	3.5	5.8
2.44385	15.2	13.3	-0.1	2.0	-40.1	3.6	7.8

2.44390	15.2	13.3	-0.1	2.0	-40.1	3.6	7.0
2.44395	15.2	13.3	-0.1	2.0	-40.1	3.6	6.7
2.44400	15.1	13.3	-0.2	2.0	-40.2	3.5	8.1
2.44405	14.9	13.3	-0.4	2.0	-40.4	3.3	6.5
2.44410	14.8	13.3	-0.5	2.0	-40.5	3.2	6.9
2.44415	14.7	13.3	-0.6	2.0	-40.6	3.1	5.4
2.44420	14.7	13.3	-0.6	2.0	-40.6	3.1	6.7
2.44425	14.7	13.3	-0.6	2.0	-40.6	3.1	6.1
2.44430	14.7	13.3	-0.6	2.0	-40.6	3.1	5.8
2.44435	14.9	13.3	-0.4	2.0	-40.4	3.3	7.2
2.44440	15.1	13.3	-0.2	2.0	-40.2	3.5	6.8
2.44445	15.4	13.3	0.1	2.0	-39.9	3.8	6.9
2.44450	15.6	13.3	0.3	2.0	-39.7	4.0	6.6
2.44455	15.9	13.3	0.6	2.0	-39.4	4.3	7.0
2.44460	16.0	13.3	0.7	2.0	-39.3	4.4	6.8
2.44465	16.1	13.3	0.8	2.0	-39.2	4.5	7.9
2.44470	16.1	13.3	0.8	2.0	-39.2	4.5	6.4
2.44475	16.2	13.3	0.9	2.0	-39.1	4.6	6.3
2.44480	16.2	13.3	0.9	2.0	-39.1	4.6	5.8
2.44485	16.2	13.3	0.9	2.0	-39.1	4.6	5.6
2.44490	16.3	13.3	1.0	2.0	-39.0	4.7	6.6
2.44495	16.3	13.3	1.0	2.0	-39.0	4.7	7.4
2.44500	16.1	13.3	0.8	2.0	-39.2	4.5	6.1
2.44505	16.0	13.3	0.7	2.0	-39.3	4.4	6.6
2.44510	15.8	13.3	0.5	2.0	-39.5	4.2	5.1
2.44515	15.8	13.3	0.5	2.0	-39.5	4.2	7.2
2.44520	15.7	13.3	0.4	2.0	-39.6	4.1	5.9
2.44525	15.8	13.3	0.5	2.0	-39.5	4.2	7.0
2.44530	15.9	13.3	0.6	2.0	-39.4	4.3	6.6
2.44535	16.1	13.3	0.8	2.0	-39.2	4.5	7.7
2.44540	16.3	13.3	1.0	2.0	-39.0	4.7	7.6
2.44545	16.5	13.3	1.2	2.0	-38.8	4.9	5.0
2.44550	16.9	13.3	1.6	2.0	-38.4	5.3	7.8
Processing Gain (dB) @ 20th percentile =				12.5			
Test Conditions							
HWB3163-04 Rev A							
Tx Card = 9928-007 Rx Card = 9928-009							
Transmitter Signal Level at Rx= -40dBm							
Firmware = 0907 Rev 0.4+							
Mode = 2Mb , Pseudo IBSS							
PktSize = 1000 bytes							
PktDly = 1, PktBurst = 6							
Intersil Chip Versions on Card							
HFA3983 Rev A11							
HFA3683A RevC							
HFA3783 Rev D01							
HFA3861A							
HFA3841							



## Testing for compliance with FCC rules 15-247e

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### Scope

This report presents the test procedure, test configuration and test data associated with a FCC Part 15.247 (e) Jamming Margin test for the indirect measurement of processing gain.

### Applicable Reference Documents.

1. "Operation within the bands 902-928 MHz, 2400-2483.5, and 5725-5850 MHz" *Title 47 Part 15 section 247 (e) Code of Federal Regulations. (47 CFR 15.247).*
2. "Report and Order: Amendment of Parts 2 and 15 of the Commission's Rules Regarding Spread Spectrum Transmitters. Appendix C: 'Guidance on Measurements for Direct Sequence Spread Spectrum Systems" *FCC 97-114. ET Docket No. 96-8, RM-8435, RM-8608, RM-8609.*
3. "HFA3861A Direct Sequence Spread Spectrum Baseband Processor" *Harris Corporation Semiconductor Sector Preliminary Data Sheet*, Melbourne FL, July 1999.
4. "M-ary Orthogonal Keying BER Curve",

### Test Background and Procedure.

According to FCC regulations [1], a direct sequence spread spectrum system must have a processing gain,  $G_p$ , of at least 10 dB. Compliance to this requirement can be shown by demonstrating a relative bit-error-ratio (BER) performance improvement (and corresponding signal to noise ratio per symbol improvement of at least 10 dB) between the case where spread spectrum processes (coding, modulation) are engaged relative to

the processes being bypassed. In some practical systems, the spread spectrum processing cannot simply be bypassed. In these cases, the processing gain can be indirectly measured by a jamming margin test [2]. In accordance with the new NPRM 99-231, if the vendor has a system with less than 10 chips per symbol, the CW jamming results must be supported by a theoretical explanation of the system processing gain.

## Theoretical calculations

The processing gain is related to the jamming margin as follows [2]:

$$G_p = \left( \frac{S}{N} \right)_{output} + \left( \frac{J}{S} \right) + L_{system}$$

Where  $BER_{REFERENCE}$  is the reference bit error ratio with its corresponding, theoretical output signal to noise ratio per symbol,  $(S/N)_{output}$ ,  $(J/S)$  is the jamming margin (jamming signal power relative to desired signal power), and  $L_{system}$  are the system implementation losses.

The maximum allowed total system implementation loss is 2 dB.

The HFA3861A direct sequence spread spectrum baseband processor uses CCK modulation which is a form of M-ary Orthogonal Keying. The BER performance curve is given by [5]:

“ The probability of error for generalized M-ary Orthogonal signaling using coherent demodulation is given by:

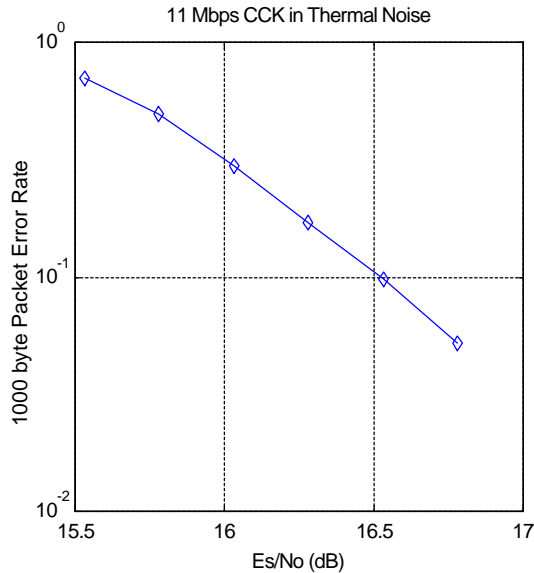
$$P_e = 1 - P_{c1} = 1 - \frac{1}{\sqrt{2p}} \int_{\frac{S_{01}}{N_0}}^{\infty} \left[ 2(1 - Q \left\{ z + \sqrt{2 \frac{E_b}{h}} \right\}) \right]^{\frac{M}{2}-1} \exp \left\{ -\frac{z^2}{2} \right\} dz$$

## intersil PRISM II radio Jamming Margin Test

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This integral cannot be solved in closed form, and numerical integration must be used. This is done in a MATHCAD environment and is displayed in graphical format.

### 1.1 1000 byte PER vs. Es/No



The reference PER is specified as 8% . The corresponding Es/No (signal to noise ratio per symbol) is 16.4 dB. The Es/No required to achieve the desired BER with maximum system implementation losses is 18.4 dB. The minimum processing gain is again, 10 dB, therefore:

$$G_p = \left( \frac{E_s}{N_o} \right)_{output} + \left( \frac{J}{S} \right) + L_{system} = 16.4dB + 2.0dB + \left( \frac{J}{S} \right) \geq 10dB$$

$$G_p = 18.4dB + \left( \frac{J}{S} \right) \geq 10dB$$

The minimum jammer to signal ratio is as follows:

$$\left( \frac{J}{S} \right) \geq -8.4dB$$

For the case of the HFA3861A, the bit rates are 1, 2, 5.5, and 11 Mbps. The corresponding symbol rates are 1, 1, 1.375, and 1.375 MSps. The chip rate is

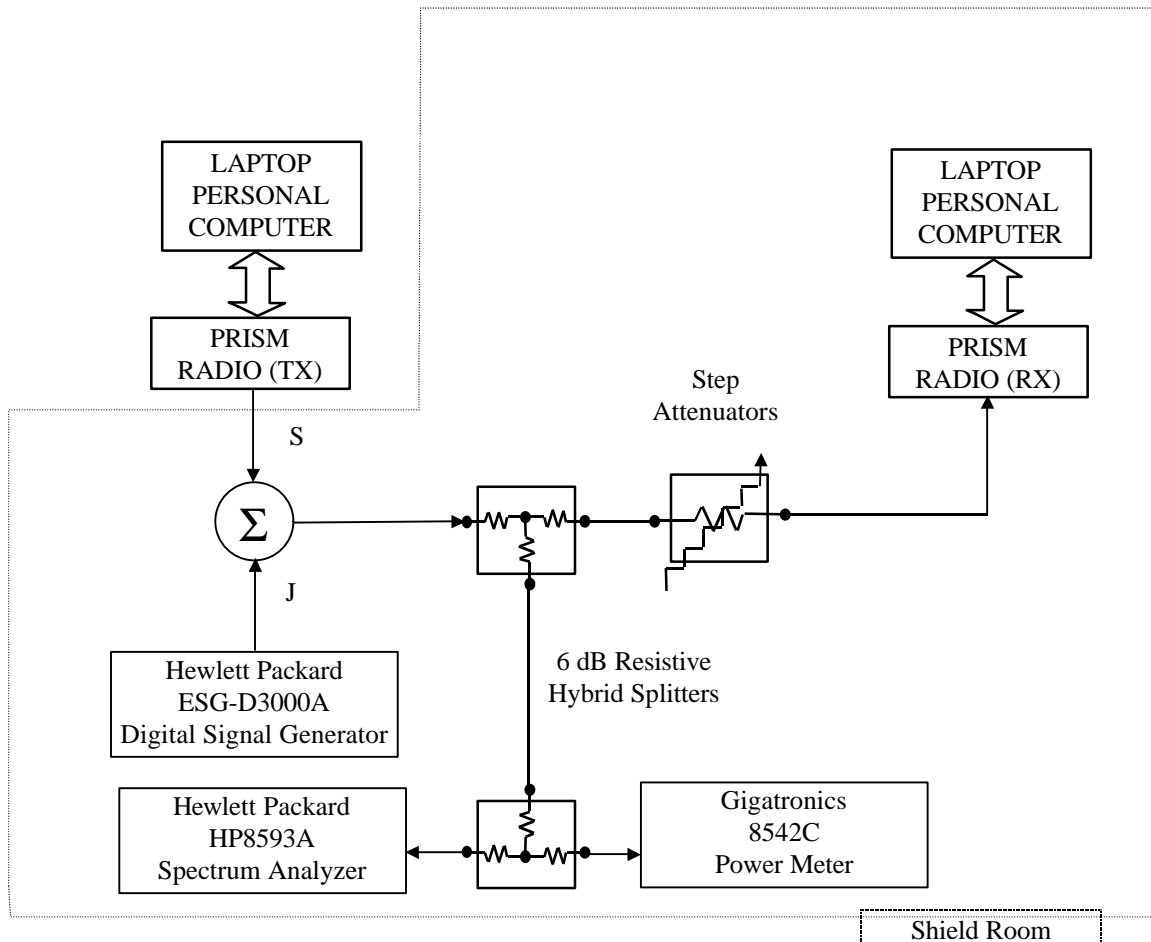
always 11 MCps, so the ratio of chip rate to symbol rate is 11:1 for the 1 and 2 Mbps rates and 8:1 for the 5.5 and 11 Mbps rates. Since the symbol rate to bit rate is less than 10 for the higher rates, we supply the theoretical processing gain calculation for these cases where both spread spectrum processing gain and coding gain are utilized. This is reasonable in that they cannot be separated in the demodulation process. If a separable FEC coding scheme were used, we would not be comfortable making this assertion.

As can be seen from the curve of figure 1, the  $E_s/N_0$  is 16.4 dB at the PER of 8%. This PER can be related to a BER of  $1e-5$  on 1000 byte packets. With 8 bits per symbol, the  $E_b/N_0$  is then 7.4 dB or 9 dB less than the  $E_s/N_0$ . It is well known that the  $E_b/N_0$  of BPSK is 9.6 dB for  $1e-5$  BER, so therefore the coding gain of CCK over BPSK is 2.2 dB. We add this to the processing gain of 9 dB to get 11.2 dB overall processing gain for the CW jammer test.

Taking the calculations above, if the  $\left(\frac{J}{S}\right) \geq -8.4 dB$  then the equipment passes the CW jamming test.

### **Test Configuration: CW Jamming Margin (15.247) (e)**

### Basic Test Block Diagram



### Test Procedure

Obtain the simplex link shown. Perform all independent instrumentation calibrations prior to this procedure. Set operating power levels using fixed and variable attenuators in system to meet the following objectives:

1. Signal Power at receiver approximately -60 dBm (above thermal sensitivity such that thermal noise does not cause bit errors).
2. Signal Power at power meter between -20 and -30 dBm for optimal linearity.
3. Use spectrum analyzer to monitor test.

## intersil PRISM II radio Jamming Margin Test

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4. Ensure that CW Jammer generator RF output is disabled and measure the power at the power meter port using the power meter. This is the relative signal power,  $S_r$ .
5. Disable Transmitter, and set CW Jammer generator RF output frequency equal to the carrier frequency and enable generator output. Set reference CW Jammer power level at power meter port 8.4 dB below  $S_r$  (minimum J/S, or 10 dB processing gain reference level). Note the power level setting on the generator, this is the reference CW Jammer power setting,  $J_r$ .
6. Disable CW Jammer, re-establish link. PER test should be operating essentially error-free.
7. Enable CW Jammer at the reference power level and verify that the PER test indicates a PER of less than 8%.
8. Alternatively, adjust the CW Jammer level to that which causes 8% PER and verify that the S/J is less than 8.4 dB.
9. Repeat step 7 for uniform steps in frequency increments of 50 kHz across the receiver passband with the CW Jammer. In this case the receiver passband is  $\pm 8.5$  MHz.

The number of points where the PER fails to achieve 8% (is higher than 8%) is determined and if this is above 20% of the total, the test is failed otherwise it is passed.

The margin by which the radio passes the test (for informational purposes) can be determined from the average of the remaining points' PERs scaled on the PER curve above.

The numerical data associated with the following radio channels is tabulated and presented for:

Channel 1: 2411 MHz  
Channel 6: 2436 MHz  
Channel 11: 2462 MHz

## Theoretical BER curves for the IEEE 1 and 2 Mbps modulations

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The expected BER versus  $E_b/N_0$  curves for these cases may be determined as follows.

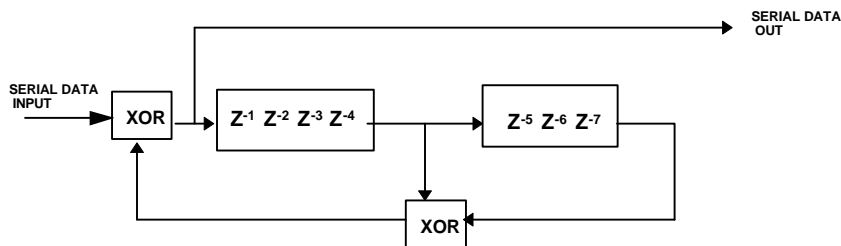
### **Differential error extension.**

The modulation is either DBPSK or DQPSK for 1 and 2 Mbps. With differential coding, there is an error extension factor of 2 which comes from the fact that if one symbol is in error, then the next will be demodulated in error too since its phase is dependent on the change of phase from symbol to symbol. In DBPSK, this results in a simple factor of two in BER. With QDQPSK, the picture is a little muddled in that a symbol error may cause one or two bit errors since two bits are carried per symbol. The IEEE 802.11 modulations use Grey coding of the phase so that usually only one bit error occurs with a symbol error. Sometimes, two bit errors occur, but this is infrequent at the BER considered. The bit error pattern can be adjacent, separated by one or separated by two for the two error case. This will be shown to be important in descrambling.

### **De-Scrambling Error Extension**

The IEEE 802.11 modulation is scrambled with a self synchronizing scrambler. This scrambler implements a polynomial multiply operation using a feed back shift register configuration as shown in figure 1.

Scrambler Polynomial;  $G(z) = Z^{-7} + Z^{-4} + 1$



It mixes two taps out of a 7 bit shift register with the data stream. The shift register is fed the received data and any error will propagate through the register for the next 7 clocks. As the error bit passes each of the taps, it will contaminate the output data. Thus each input error can produce several errors on the output. The bit error rate has to be adjusted to account for this effect. For the IEEE 802.11 modulation, taps at registers 4 and 7 are used. In BPSK mode, this produces an error extension of 3. Thus, for an output rate of  $10^{-5}$ , the input rate must be  $0.33 * 10^{-6}$  which requires that the  $E_b/N_0$  be increased by 0.5 dB. In QPSK mode, the errors can be non adjacent since they are symbol errors and the bit in error can be either the first or second of the dibits. This makes it possible for some errors to cancel in the de-scrambler. Therefore the error extension can be either 2 or 3 in this case.

What we see when running the BER test is that the errors generally occur in groups of 6 with occasional 4s.

The overall effect is to move where we operate on the BER curve. The curve below shows the resulting BER versus  $E_b/N_0$  curve. It is well known that a simple BPSK link operates at 9.6 dB for  $1e-5$  BER. With the error extension effect, we see that at that  $E_b/N_0$ , the error rate is  $6e-5$ . Or, conversely, we must operate at 10.3 dB to get  $1e-5$ .

When operating DQPSK at 2 Mbps, the  $E_b/N_0$  remains essentially the same, but the  $E_s/N_0$  goes up by 3 dB. For the purposes of the FCC testing for CW jamming, we add the allowed 2 dB for implementation loss to get a net  $E_s/N_0$  of 15.3 dB.

**DQPSK BER curve with descrambling**

