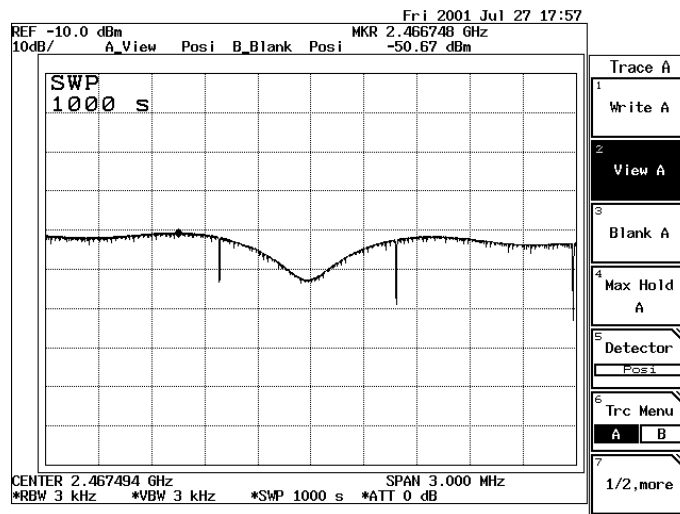


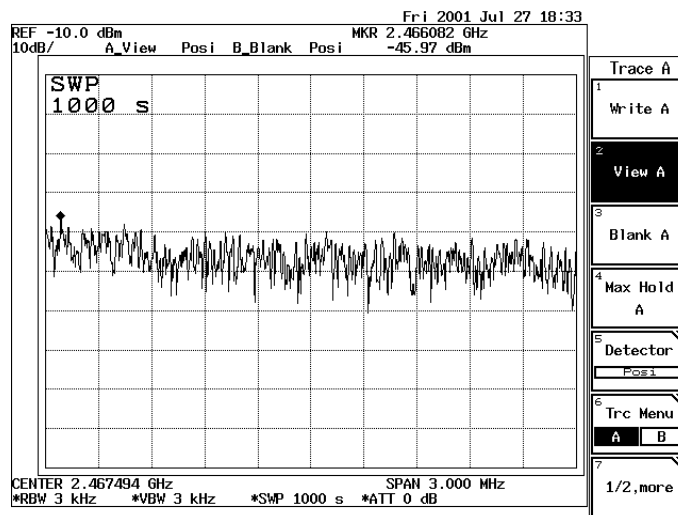
Product : Wireless LAN Card
 Test Item : Transmitter Power Density Data
 Test Site : No.1 OATS
 Test Mode : Normal Operation

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
11 (1Mbps)	2466.748	-50.67dBm	< 8dBm	Pass
11 (11Mbps)	2463.412	-16.88dBm	< 8dBm	Pass

1Mbps



11Mbps



8. Processing Gain

8.1. Test Condition

Standard Temperature and Humidity, Standard Test Voltage

8.2. Minimum Standard

The processing gain shall be at least 10 dB.

8.3. Method of Measurement

The processing gain of this spread spectrum was measured the CW jamming method. The Section 9.1 illustrates the measurement setup. The output power of the spread spectrum transmitter is fixed and the output power of jammer is adjustable. The frequency of jammer was stepped through the pass band of nominal channel in 50kHz steps. In each frequency step of the jammer, the output power of jammer is adjusted to cause the Bit Error Rate (BER) to be 1.0×10^{-6} . The power levels are recorded to calculate the J/S as shown in Table 1.

8.4. Calculation of Processing Gain:

The processing gain was determined by measuring the jamming margin of the EUT and using the following formula:

$$G_p = (S/N)_o + M_j + L_{sys}$$

Where $(S/N)_o$ is the required signal to noise ratio at the receiver output

M_j is the jammer to signal ratio (J/S)

L_{sys} is the system loss

The $(S/N)_o$ is calculated from:

$$P_e = 1/2 \exp(-1/2(S/N)_o) \quad ; \quad P_e = \text{probability of error (BER)}$$

For the $P_e(\text{BER}) = 1.0 \times 10^{-6}$, the required $(S/N)_o$ is 14.2dB

From Measurement, the minimum J/S(M_j) is -3.4dB

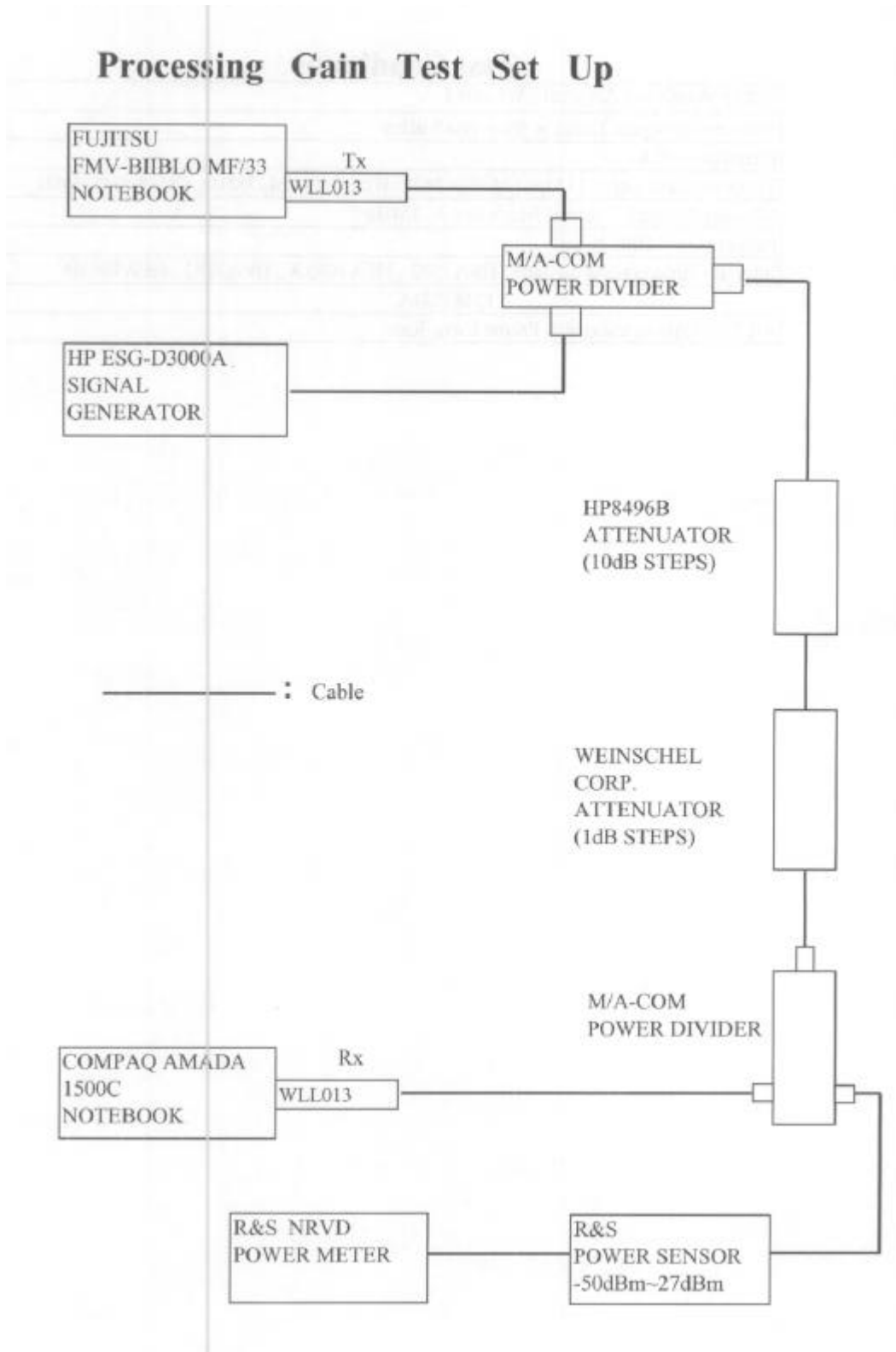
We assume the system loss is 1dB.

Therefore the processing gain is calculated below:

$$G_p = (S/N)_o + M_j + L_{sys} = 14.2 + (-3.4) + 1 = 11.8 \text{ (dB)}$$

8.5. Test Result of Processing Gain

Product : Wireless LAN Card
 Test Item : Processing Gain Data
 Test Site : No.1 OATS
 Test Mode : Normal Operation



Product : Wireless LAN Card
Test Item : Processing Gain Data
Test Site : No.1 OATS
Test Mode : Normal Operation

Transmitter Signal Level at Rx = -40.5 dBm
Firmware = 1.4f.8
Transmit Data rate = 11Mps @CH1=2412MHz, CH6=2437MHz,
Measure Range = central frequency +- 2MHz
Packet size = 1000 bytes
Intersil Chip versions on card : HFA3983 , HFA3683A ,
AT76C510
All Test Data is under 8% Frame Error Rate

Product : Wireless LAN Card
 Test Item : Processing Gain Data
 Test Site : No.1 OATS
 Test Mode : Channel 1

11 Mbps CHANNEL 1 Processing Gain					
Gp=(S/N)o+Mj+Lsys					
Freq. (GHz)	Gp (dB)	(S/N)o (dB)	Mj=J/S (dB)	Lsys (dB)	Jammer (dBm)
2.41	11.1	16.4	-7.3	2	-47.8
2.4101	11.2	16.4	-7.2	2	-47.7
2.4102	11.4	16.4	-7	2	-47.5
2.4103	11.3	16.4	-7.1	2	-47.6
2.4104	11.3	16.4	-7.1	2	-47.6
2.4105	11.3	16.4	-7.1	2	-47.6
2.4106	11.3	16.4	-7.1	2	-47.6
2.4107	11.3	16.4	-7.1	2	-47.6
2.4108	11.6	16.4	-6.8	2	-47.3
2.4109	11.8	16.4	-6.6	2	-47.1
2.411	12.1	16.4	-6.3	2	-46.8
2.4111	12.1	16.4	-6.3	2	-46.8
2.4112	12.1	16.4	-6.3	2	-46.8
2.4113	11.9	16.4	-6.5	2	-47
2.4114	12	16.4	-6.4	2	-46.9
2.4115	12	16.4	-6.4	2	-46.9
2.4116	12.4	16.4	-6	2	-46.5
2.4117	12.5	16.4	-5.9	2	-46.4
2.4118	12.7	16.4	-5.7	2	-46.2
2.4119	12.5	16.4	-5.9	2	-46.4
2.412	12.5	16.4	-5.9	2	-46.4
2.4121	12.5	16.4	-5.9	2	-46.4
2.4122	12.6	16.4	-5.8	2	-46.3
2.4123	12.5	16.4	-5.9	2	-46.4
2.4124	12.5	16.4	-5.9	2	-46.4
2.4125	12.2	16.4	-6.2	2	-46.7
2.4126	12.2	16.4	-6.2	2	-46.7
2.4127	12	16.4	-6.4	2	-46.9
2.4128	11.8	16.4	-6.6	2	-47.1
2.4129	11.7	16.4	-6.7	2	-47.2
2.413	11.6	16.4	-6.8	2	-47.3
2.4131	11.5	16.4	-6.9	2	-47.4
2.4132	11.5	16.4	-6.9	2	-47.4
2.4133	11.4	16.4	-7	2	-47.5
2.4134	11.3	16.4	-7.1	2	-47.6
2.4135	11.3	16.4	-7.1	2	-47.6
2.4136	11.3	16.4	-7.1	2	-47.6
2.4137	11.3	16.4	-7.1	2	-47.6
2.4138	11.1	16.4	-7.3	2	-47.8
2.4139	11.1	16.4	-7.3	2	-47.8
2.414	11	16.4	-7.4	2	-47.9

Product : Wireless LAN Card
 Test Item : Processing Gain Data
 Test Site : No.1 OATS
 Test Mode : Channel 6

11 Mbps CHANNEL 6 Processing Gain					
$G_p = (S/N)_o + M_j + L_{sys}$					
Freq.	Gp	(S/N)_o	M_j=J/S	L_{sys}	Jammer
(GHz)	(dB)	(dB)	(dB)	(dB)	(dBm)
2.435	10.4	16.4	-8	2	-48.5
2.4351	10.5	16.4	-7.9	2	-48.4
2.4352	10.6	16.4	-7.8	2	-48.3
2.4353	10.7	16.4	-7.7	2	-48.2
2.4354	10.8	16.4	-7.6	2	-48.1
2.4355	10.5	16.4	-7.9	2	-48.4
2.4356	10.6	16.4	-7.8	2	-48.3
2.4357	10.7	16.4	-7.7	2	-48.2
2.4358	10.8	16.4	-7.6	2	-48.1
2.4359	11	16.4	-7.4	2	-47.9
2.436	11.2	16.4	-7.2	2	-47.7
2.4361	11.3	16.4	-7.1	2	-47.6
2.4362	11.4	16.4	-7	2	-47.5
2.4363	11	16.4	-7.4	2	-47.9
2.4364	11	16.4	-7.4	2	-47.9
2.4365	11.3	16.4	-7.1	2	-47.6
2.4366	11.5	16.4	-6.9	2	-47.4
2.4367	11.6	16.4	-6.8	2	-47.3
2.4368	11.7	16.4	-6.7	2	-47.2
2.4369	11.7	16.4	-6.7	2	-47.2
2.437	11.6	16.4	-6.8	2	-47.3
2.4371	11.6	16.4	-6.8	2	-47.3
2.4372	11.6	16.4	-6.8	2	-47.3
2.4373	11.7	16.4	-6.7	2	-47.2
2.4374	11.7	16.4	-6.7	2	-47.2
2.4375	11.7	16.4	-6.7	2	-47.2
2.4376	11.6	16.4	-6.8	2	-47.3
2.4377	11.6	16.4	-6.8	2	-47.3
2.4378	11.4	16.4	-7	2	-47.5
2.4379	11.4	16.4	-7	2	-47.5
2.438	11.4	16.4	-7	2	-47.5
2.4381	11.4	16.4	-7	2	-47.5
2.4382	11.4	16.4	-7	2	-47.5
2.4383	11.1	16.4	-7.3	2	-47.8
2.4384	11.1	16.4	-7.3	2	-47.8
2.4385	11.1	16.4	-7.3	2	-47.8
2.4386	11	16.4	-7.4	2	-47.9
2.4387	10.9	16.4	-7.5	2	-48
2.4388	10.8	16.4	-7.6	2	-48.1
2.4389	10.8	16.4	-7.6	2	-48.1
2.439	10.8	16.4	-7.6	2	-48.1

Product : Wireless LAN Card
 Test Item : Processing Gain Data
 Test Site : No.1 OATS
 Test Mode : Channel 11

11 Mbps CHANNEL 11 Processing Gain					
$G_p=(S/N)_o+M_j+L_{sys}$					
Freq.	Gp	(S/N)_o	M_j=J/S	L_{sys}	Jammer
(GHz)	(dB)	(dB)	(dB)	(dB)	(dBm)
2.46	10.2	16.4	-8.2	2	-48.7
2.4601	10.2	16.4	-8.2	2	-48.7
2.4602	10.3	16.4	-8.1	2	-48.6
2.4603	10.3	16.4	-8.1	2	-48.6
2.4604	10.3	16.4	-8.1	2	-48.6
2.4605	10.2	16.4	-8.2	2	-48.7
2.4606	10.3	16.4	-8.1	2	-48.6
2.4607	10.3	16.4	-8.1	2	-48.6
2.4608	10.4	16.4	-8	2	-48.5
2.4609	10.5	16.4	-7.9	2	-48.4
2.461	10.8	16.4	-7.6	2	-48.1
2.4611	10.8	16.4	-7.6	2	-48.1
2.4612	10.8	16.4	-7.6	2	-48.1
2.4613	10.7	16.4	-7.7	2	-48.2
2.4614	10.8	16.4	-7.6	2	-48.1
2.4615	11	16.4	-7.4	2	-47.9
2.4616	11.1	16.4	-7.3	2	-47.8
2.4617	11.4	16.4	-7	2	-47.5
2.4618	11.4	16.4	-7	2	-47.5
2.4619	11.4	16.4	-7	2	-47.5
2.462	11.3	16.4	-7.1	2	-47.6
2.4621	11.6	16.4	-6.8	2	-47.3
2.4622	11.6	16.4	-6.8	2	-47.3
2.4623	11.8	16.4	-6.6	2	-47.1
2.4624	11.9	16.4	-6.5	2	-47
2.4625	11.9	16.4	-6.5	2	-47
2.4626	11.9	16.4	-6.5	2	-47
2.4627	11.9	16.4	-6.5	2	-47
2.4628	11.6	16.4	-6.8	2	-47.3
2.4629	11.6	16.4	-6.8	2	-47.3
2.463	11.4	16.4	-7	2	-47.5
2.4631	11.4	16.4	-7	2	-47.5
2.4632	11.3	16.4	-7.1	2	-47.6
2.4633	11.2	16.4	-7.2	2	-47.7
2.4634	11.1	16.4	-7.3	2	-47.8
2.4635	11.1	16.4	-7.3	2	-47.8
2.4636	11.1	16.4	-7.3	2	-47.8
2.4637	11	16.4	-7.4	2	-47.9
2.4638	11	16.4	-7.4	2	-47.9
2.4639	10.9	16.4	-7.5	2	-48
2.464	10.8	16.4	-7.6	2	-48.1