P-Com, Inc.- Headquarters
3175 S. Winchester Boulevard
Campbell, CA 95008 U.S.A.
Tel: (1) 408.866.3666 Fax: (1) 408.866.3655

Federal Communications Commission
7435 Oakland Mills Road
Columbia, MD 21046

April 24, 1998

Gentlemen:

This is your letter of authorization to accept our limited appointment of Thomas N. Cokenias as Agent for P-Com, Inc., to sign applications before the Commission and to make representations to you concerning certain products on our behalf. Thomas N. Cokenias is to receive and exchange data between our company and the Commission. This request is made pursuant to paragraph 2.911 of FCC Rules, CFR 47 and is limited to the following P-Com product:

AirPro

This authorization expires on April 25, 1999.

The accompanying data is also being filed on our behalf by Thomas N. Cokenias. Included as exhibits with the enclosed application are: a set of photographs, block diagrams and schematic diagrams of the cited unit. It is our intention to provide the Commission with a full disclosure of our process so that its merits can be evaluated fully. Indeed, we are pleased to provide any further information that the Commission might wish to see. It is not our intention, however, to make our proprietary process a matter of public record.

In view of the fact that the diagrams and associated theory of operation disclose information confidential to P-Com, we ask that these portions (block diagram, schematic diagram, and theory of operation) of our application be withheld from public inspection as provided under FCC §0.459. These details are not readily discernible - even to technically sophisticated individuals - from our hardware and constitute trade secrets. We would also like to extend this to the currently submitted documents. We request that these documents and this letter be segregated from the body of our evaluation report and withheld from public inspection.

Thank you for your attention. Please let F.W. Miller (408-328-5901) know if the Commission disagrees with our position or requires further justification.

Sincerely,

John R. Wood
Senior Vice President
Product Technologies
P-Com, Inc.

cc: F.W. Miller, Product Marketing

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To whom it may concern:

I hereby certify on behalf of P-Com, Inc, 3175 South Winchester Boulevard, Campbell, CA 95008, USA, ("Applicant"), that neither the Applicant nor any party to the application (officers, directors and 5% shareholders) is subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C.853a.

Sincerely,

John R. Wood
Senior Vice President
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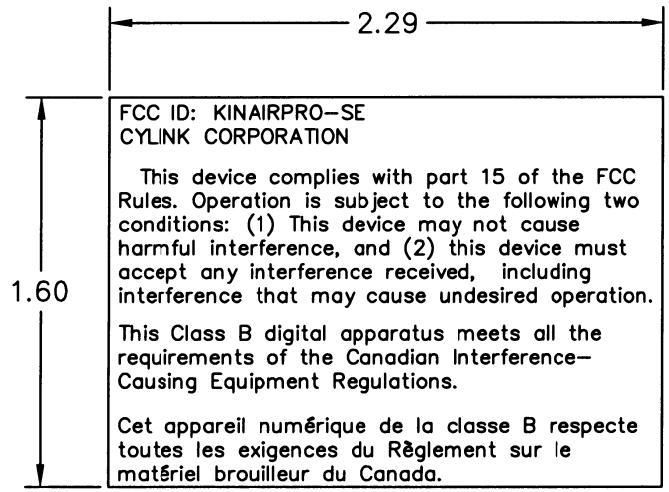
DWG. NO.	SHT	REV
FD-16181-001	1	2

REVISIONS		
DESCRIPTION	DATE	APPROVED
1 PROTOTYPE	11/18/96	
2 UPDATE	4/29/98	



NOTES: UNLESS OTHERWISE SPECIFIED.

(1) MATERIAL: .005 THICK, FINE TEXTURED POLYCARBONATE, SUBSURFACE PRINTED, COLOR OF CHARACTERS BLACK, BACKGROUND TO BE SILVER. ADHESIVE TO BE 3M 468.

2. USE ARTWORK AW-16181-001.

3. BAG AND TAG THE LOT WITH PART NO. 16181-001, CURRENT REV OF THIS DRAWING AND MANUFACTURER'S IDENT.

QTY REQD	FSCM NO.	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION	ITEM NO.

PARTS LIST

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .02 .XXX ± .010 ANGLES ±

MATERIAL (1)

FINISH

DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS	DATE
DRAWN PERCY GUNA	2/17/98
CHECKED	
ISSUED	

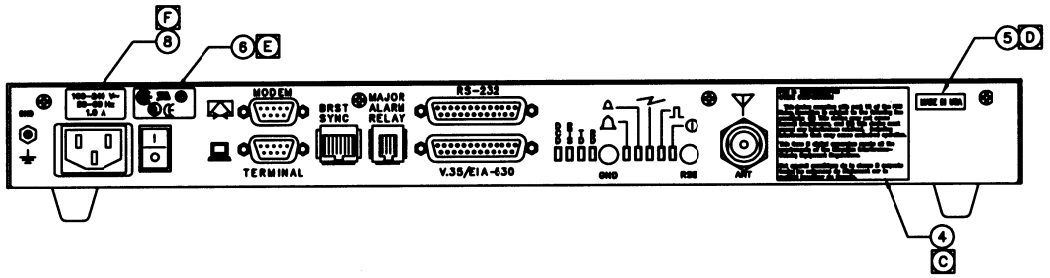
NEXT ASSY	USED ON
	APS
APPLICATION	

CYLINK

FAB DWG, LABEL, FCC
PART 15, AIRLINK PRO S

SIZE	FSCM NO.	DWG. NO.	REV
B		FD-16181-001	2

SCALE NONE SHEET 1 OF 1



REAR VIEW OF ASSEMBLY

January 23, 1994

AirLink VF Processing Gain Measurement

1. Set-up

The Set-up shown in Figure 1 was Used. The Unit Under Test - An Airlink VF Wireless Modem has been connected as shown. The Modems were running in Simplex while the receiving modem is being interferred with by the CW signal. The transmit section of the BER Tester generated a pseudo-random sequence with a period of 2^{20}-1 (arbitrary).
Both Airlink Modems were set to channel 5: 913.682 MHz.
The Signal Generator [SG] operated as a CW source with power resolution of 0.1 dB. It was set for frequency increment of 25 KHz. Fifty frequency steps below and 50 frequency steps above the center frequency of the receiver cover the RF bandwidth of the receiver of the Modem.

1.1 Calibration

The Adjustable attenuator was set to 25 dB. The received signal power was then -69.4 dBm. It was found that to obtain equal Signal and Jammer power, (i.e. J/S=0 dB), as measured by the Power Meter, the SG had to be set to -45.6 dBm.

1.2 Procedure

The SG frequency has then been incremented between 913.682 MHz minus 50x0.025 MHz and 913.682 MHz plus 50x0.025 MHz. For each frequency step the power of the SG was set to produce exactly BER=10^{-4}. The deviation of the SG setting from -45.6 dB has been recorded as the J/S for that frequency.

1.3 Measured Results

The measurements are shown in Figure 2 and the attached list.

2. Processing Gain Derivation

Deleting the worst 20% of the measurements, i.e. 20 measurements, (marked in the attached list) we find that the worst remaining measurement is J/s=-1 dB.

The Processing Gain is now calculated from the formula:

$$\text{Jamming Margin} = G_p - (S/N)_{out} - L_{sys} \qquad 1$$

where:

* Jamming Margin is the maximum ratio of Jammer to Signal power, which still allows the receiver to deliver the prescribed BER.

* $(S/N)_{out}$ is the signal to noise ratio required at the input of that part of an ideal receiver (of the same type), which accomplishes data demodulation, in order to obtain a prescribed BER.

* L^{sys} is the total losses of the tested receive system in comparison with an ideal (theoretical) system having the same type of Modulation/Demodulation. In our case the basic modulation scheme is Noncoherent Orthogonal Signalling. Cylink estimates that the total system losses of the Airlink VF are in access of 1.5 dB. This figure includes losses in the transmitter and the receiver. The major contributor to this total loss are the nonideal analog filters/equalizers and "corner cutting" in the Base-band Digital Processor.

* G_p is the Processing Gain.

For an explanation see: Robert C.Dixon "Spread Spectrum Systems", John Wiley & Sons, 1984 (second edition), page 10.

2.1 Calculation

The theoretical performance of noncoherent reception of orthogonal signals is given, for instance, by A. J. Viterbi, McGraw-Hill Book Company, 1966 page 207:

$$P_e = (1/2)EXP\{-E/2N_o\} \qquad 2$$

where E/N_o should be replaced for our purpose by $(S/N)_{out}$.

For BER=10^{-4} this formula requires (S/N) = 12.3 dB.

As said above we will take: L_{sys} = 1.5 dB

As said above, the worst remaining Jammer to Signal Power Ratio in Table 1 after omitting the "worst" 20 measurements, is -1 dB.

From formula 1 we obtain:

$$G_p = (J/S) + (S/N)_{out} + L_{sys} \qquad 3$$

Substituting the numerical values we obtain:

$$G_p = -1 + 12.3 + 1.5 = \underline{12.8\ dB}$$

Table 1: Jammer Power to Signal Power Ratio for BER=10^{-4}
Signal Power Constant at - 69.4 dBm.

	Frequency	J/S	
1	912.432	7.7	
2	912.457	8.2	
3	912.482	7.5	
4	912.507	7.6	
5	912.532	6.9	
6	912.557	6.8	
7	912.582	6.3	
8	912.607	6.5	
9	912.632	5.8	
10	912.657	4.5	
11	912.682	5.3	
12	912.707	5.3	
13	912.732	5.1	
14	912.757	4.6	
15	912.782	3.9	
16	912.807	3.8	
17	912.832	3.1	
18	912.857	3.3	
19	912.882	2.9	
20	912.907	3.3	
21	912.932	2.6	
22	912.957	2.0	
23	912.982	2.1	
24	913.007	1.9	
25	913.032	1.6	
26	913.057	1.1	
27	913.082	0.7	
28	913.107	1.0	
29	913.132	0.5	
30	913.157	0.1	
31	913.182	0.0	
32	913.207	-0.9	
33	913.232	-0.4	
34	913.257	-0.3	
35	913.282	-0.8	
36	913.307	-0.1	
37	913.332	-0.3	
38	913.357	-0.4	
39	913.382	-1.0	*
40	913.407	-2.6	*
41	913.432	-2.0	*
42	913.457	-1.5	*
43	913.482	-1.2	*
44	913.507	-2.4	*
45	913.532	-2.5	*
46	913.557	-2.0	*
47	913.582	-2.6	*
48	913.607	-3.3	*
49	913.632	-1.0	

50	913.657	2.5	
51	913.682	34.1	
52	913.707	2.8	
53	913.732	-0.3	
54	913.757	-2.1	*
55	913.782	-2.1	*
56	913.807	-1.7	*
57	913.832	-1.9	*
58	913.857	-2.0	*
59	913.882	-1.2	*
60	913.907	-1.1	*
61	913.932	-1.6	*
62	913.957	-2.0	*
63	913.982	-1.4	*
64	914.007	-0.6	
65	914.032	-0.2	
66	914.057	-0.7	
67	914.082	-0.7	
68	914.107	-0.2	
69	914.132	-0.2	
70	914.157	-0.2	
71	914.182	0.0	
72	914.207	-0.1	
73	914.232	0.7	
74	914.257	1.4	
75	914.282	0.7	
76	914.307	1.5	
77	914.332	0.4	
78	914.357	2.2	
79	914.382	3.0	
80	914.407	2.5	
81	914.432	2.8	
82	914.457	4.0	
83	914.482	3.3	
84	914.507	3.3	
85	914.532	3.4	
86	914.557	3.8	
87	914.582	4.5	
88	914.607	4.9	
89	914.632	5.3	
90	914.657	5.2	
91	914.682	4.8	
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96	914.807	6.8	
97	914.832	7.0	
98	914.857	8.0	
99	914.882	7.6	
100	914.907	8.3	
101	914.932	8.0	

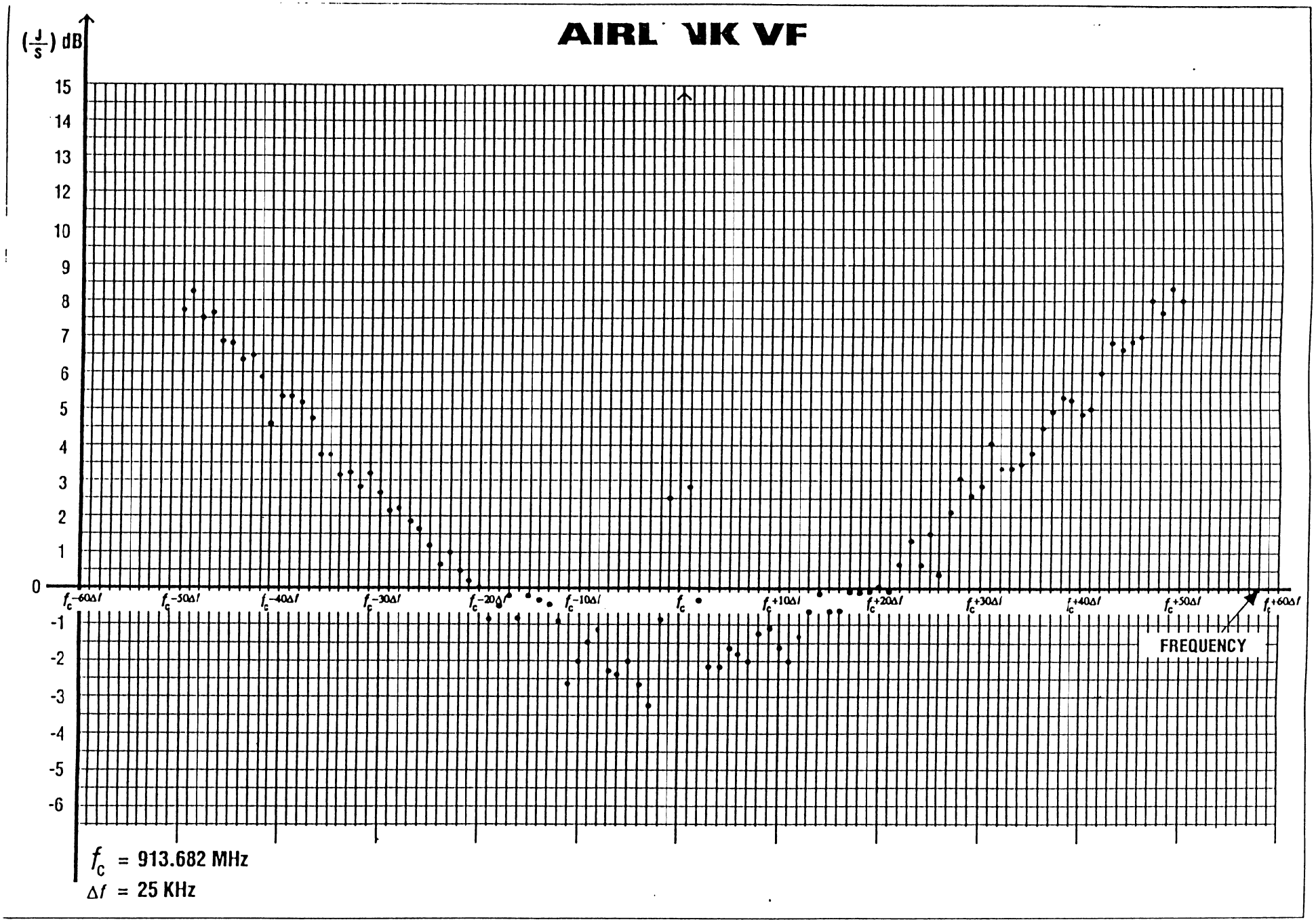

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FIGURE : $(\frac{J}{S})$ dB REQUIRED FOR BER = 10^{-4}

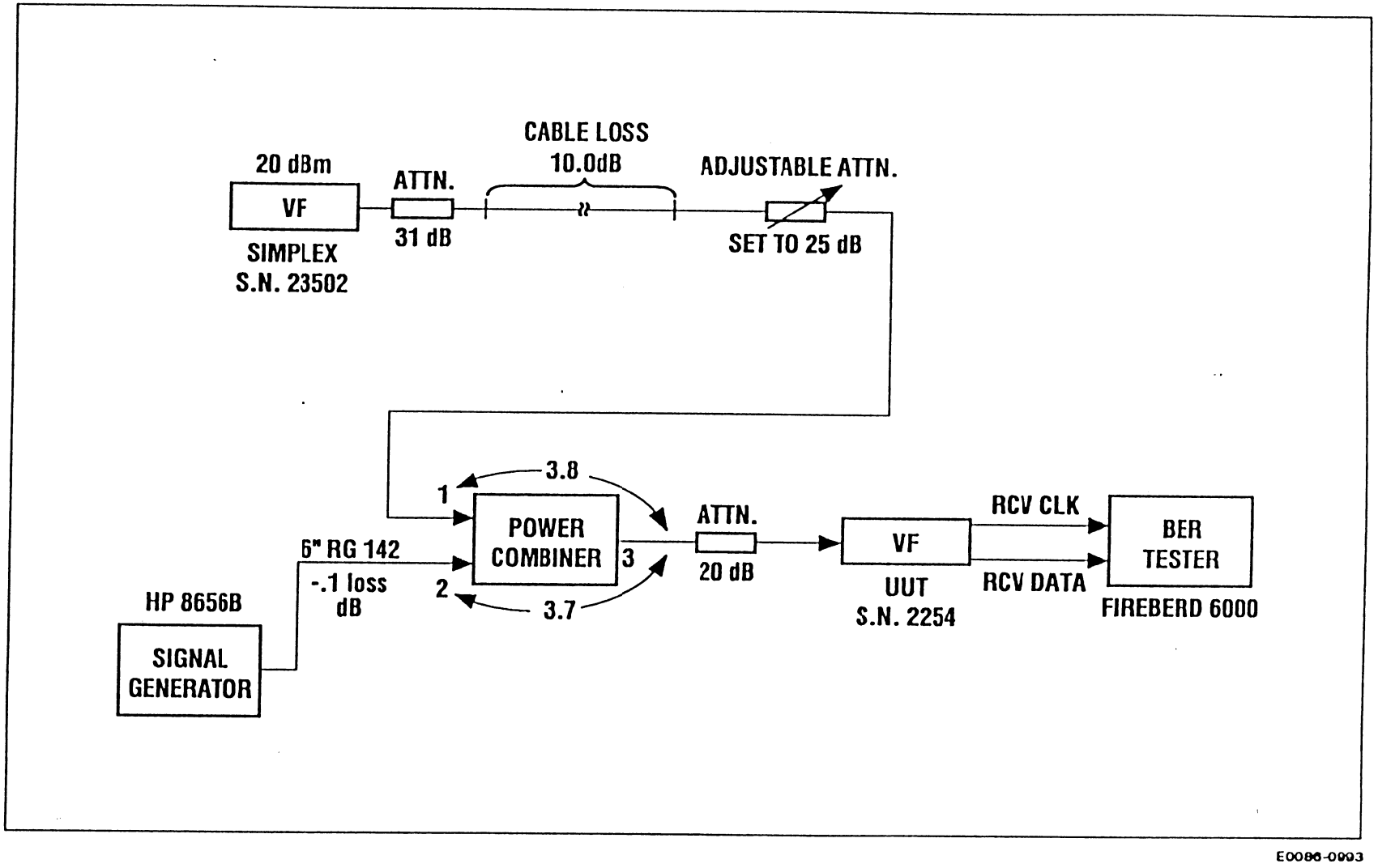

FIGURE 1: Set-up for BER versus J/S measurement. Modems running in simplex.