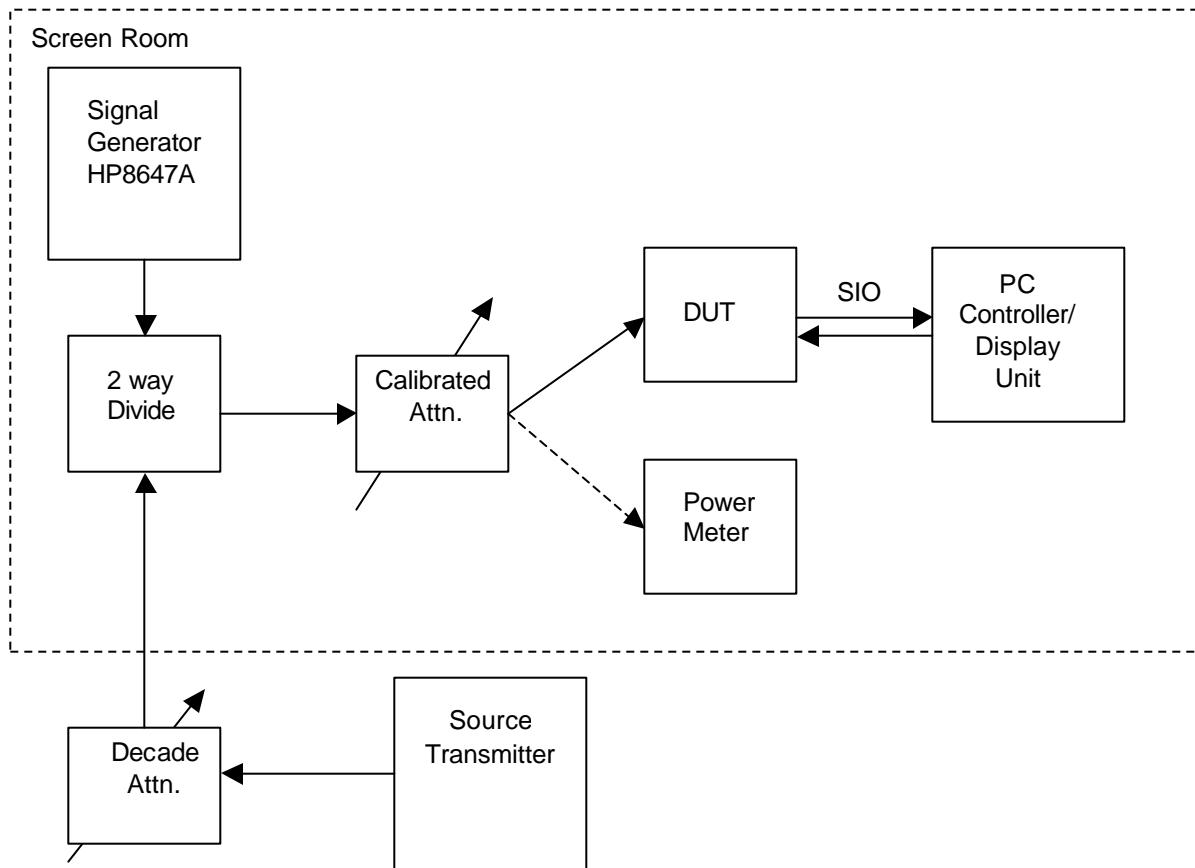


## Process Gain Measurement

### Method

The processing gain is measured using the CW jamming method. The equipment arrangement is shown in the block diagram below.

### Process Gain Tests Configuration



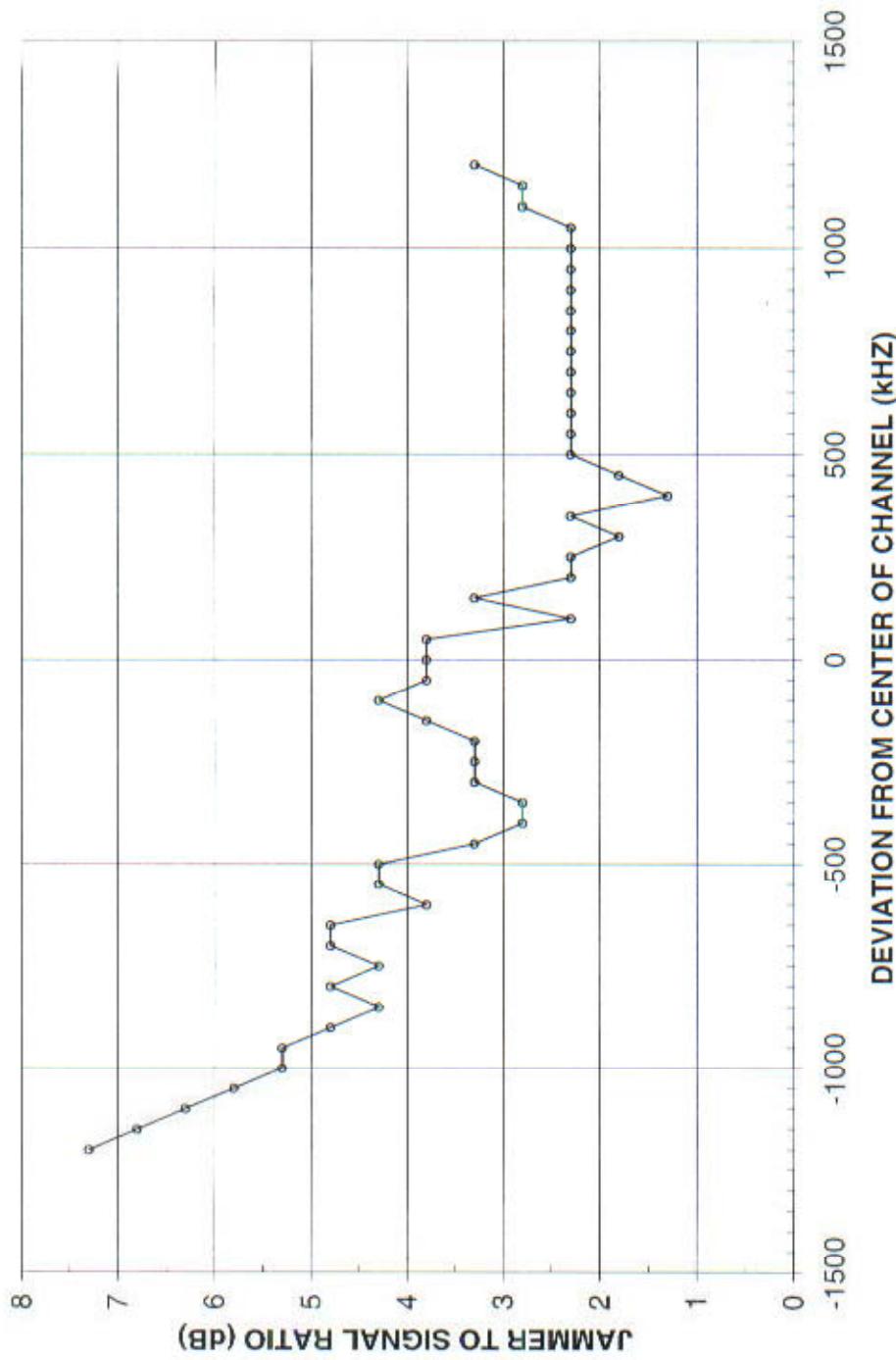
### Procedure

A signal generator is stepped in 50kHz increments across the passband of the system. At each point the generator level required to produce a bit error rate equivalent to  $2.7 \times 10^{-3}$ , the threshold of designed performance for the system, is recorded as the jammer level (J). The output power of the transmitter is measured at the same point and recorded as signal (S). The jammer to signal ratio (J/S) is then calculated with 20% of the worst data points discarded. The lowest remaining J/S ratio is used to calculate the processing gain using the formula:

$$G_p = (S/N)_0 + M_j + L_{sys}$$

The theoretical probability of error vs. S/N is shown in the curve below, obtained from section 4.3.2 of Digital Communications, second edition, John G. Proakis, McGraw-Hill.

**BLT 3 JAMMER TO SIGNAL RATIO  
IN 50 kHz STEPS**



Deviation (in kHz)	Jammer Freq. (in MHz)	Jammer (dBm)	Signal (dBm)	JS Ratio (dB)
-1500	915.38	-1200	-107.7	-111
-1495	916.43	-1150	-108.2	-111
-1490	916.48	-1100	-108.2	-111
-1485	916.53	-1050	-108.7	-111
-1480	916.58	-1000	-108.7	-111
-1475	916.63	-950	-108.7	-111
-1470	916.68	-900	-108.7	-111
-1465	916.73	-850	-108.7	-111
-1460	916.78	-800	-108.7	-111
-1455	916.83	-750	-108.7	-111
-1450	916.88	-700	-108.7	-111
-1445	916.93	-650	-108.7	-111
-1440	916.98	-600	-108.7	-111
-1435	917.03	-550	-108.7	-111
-1430	917.08	-500	-108.7	-111
-1425	917.13	-450	-109.2	-111
-1420	917.18	-400	-109.7	-111
-1415	917.23	-350	-108.7	-111
-1410	917.28	-300	-109.2	-111
-1405	917.33	-250	-108.7	-111
-1400	917.38	-200	-108.7	-111
-1395	917.43	-150	-107.7	-111
-1390	917.48	-100	-108.7	-111
-1385	917.53	-50	-107.7	-111
-1380	917.58	0	-107.2	-111
-1375	917.63	-50	-107.2	-111
-1370	917.68	-100	-106.7	-111
-1365	917.73	-150	-107.2	-111
-1360	917.78	-200	-107.7	-111
-1355	917.83	-250	-107.7	-111
-1350	917.88	-300	-107.7	-111
-1345	917.93	-350	-106.7	-111
-1340	917.98	-400	-108.2	-111
-1335	918.03	-450	-107.7	-111
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-1275	918.63	-1050	-105.2	-111
-1270	918.68	-1100	-104.7	-111
-1265	918.73	-1150	-104.2	-111
-1260	918.78	-1200	-103.7	-111