



Intertek Testing Services ETL SEMKO

August 16, 2000

Federal Communications Commission
Equipment Authorization Division
Application Processing Branch
7435 Oakland Mills Road
Columbia, MD 21046

Attention: Mr. Joe Dichoso

Reference: Sony Corporation, FCC ID: AK8SPPA9276
Confirmation # EA98080, Reference # 15614

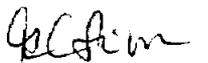
Dear Mr. Dichoso:

Enclosed please find our answers to Items 1 & 2 of the information request letter received on 8/15/00 for Sony Corporation, FCC ID: AK8SPPA9276, Confirmation #EA98080, Reference #15614.

We hope that our responses will resolve these issues and Mr. Chang will be able to proceed with the RF Safety technical review as our client, Sony Corporation, is very eager to have this product granted.

Should you need more or have any questions, please contact Ollie Moyrong or the undersigned. Thank you.

Sincerely,


Gaspara Lim

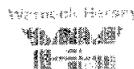
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Enclosures

Intertek Testing Services NA, Inc.

1365 Adams Court, Menlo Park, CA 94025

Telephone 650-463-2900 Fax 650-463-2910 Home Page www.etlsemko.com



ITS Intertek Testing Services
ETL SEMKO

From: Ollie Moyrong, Intertek Testing Services
omoyrong@itsqs.com

To: Joe Dichoso
jdichoso@fcc.gov
FCC Application Processing Branch

Subject: Further request for Information

Re: FCC ID AK8SPPA9276
Applicant: Sony Corporation
Correspondence Ref. Number: 15614
731 Confirmation Number: EA98080
Date of Original E-Mail: 8/15/2000

Dear Mr. Joe Dichoso,

Below are our responses to your concerns regarding the above mentioned application:

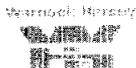
1. Details for process gain are attached on pages titled "Process Gain".
2. Peak power measurements were remeasured with a power meter and the test report has been amended with the new results. Please see the attached pages from the test report.

Please notify us if you require additional clarification. Thank you.

Best regards,

Ollie Moyrong

Ollie Moyrong



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Process Gain

Level One Communications, Inc.

Processing gain for model LDB 810 Demonstration System REV 7
(REV 7B: Base, REV 7P: Portable)

The C/W jamming method was used to determine processing gain. The jamming frequency was swept from 914.00 MHz to 915.00 MHz in 50 kHz increments. The desired input power was set at -49.7 dBm. The jamming power was adjusted to obtain a bit error rate of $1e-4$.

The system utilizes non-coherent FM with discrimination detection. The peak frequency deviation is 0.35 the modulation frequency: $F_d = .35 F_s$. A copy of page 229 out of Jakes "Microwave Mobile Communications" is attached to demonstrate the required S/N of 11.0 dB for a $1e-4$ error probability.

Using the equation $G_p = S/N + J/S + L_{sys}$ with:

G_p = processing gain

S/N = required signal to noise ratio for a given probability of error (in this case $1e-4$)

J/S = Jammer to desired signal ratio

L_{sys} = System loss due to non-idealities, maximum allowed is 2.0 dB

The calculated worst case processing gain was 10.0 dB for jamming frequencies of 914.40 MHz and 915.65 MHz. For all other jamming frequencies, the processing gain was greater than 10.0 dB.

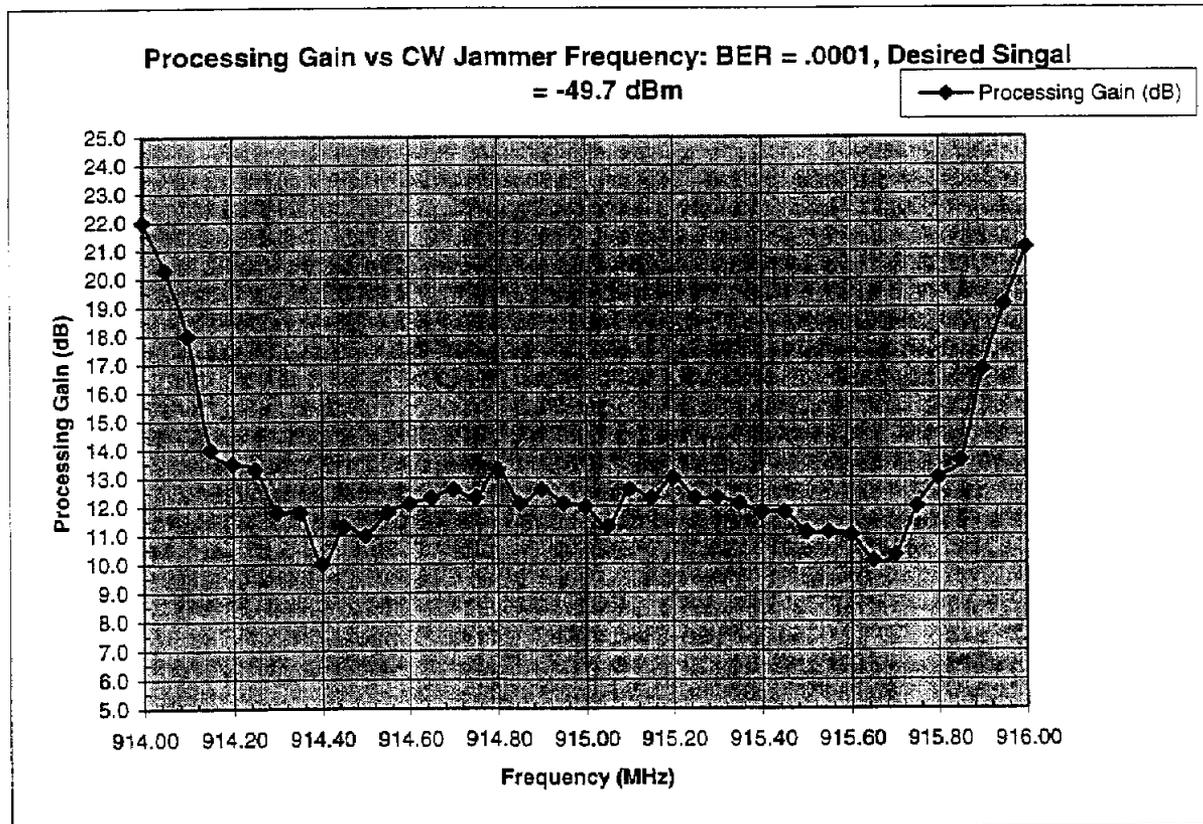
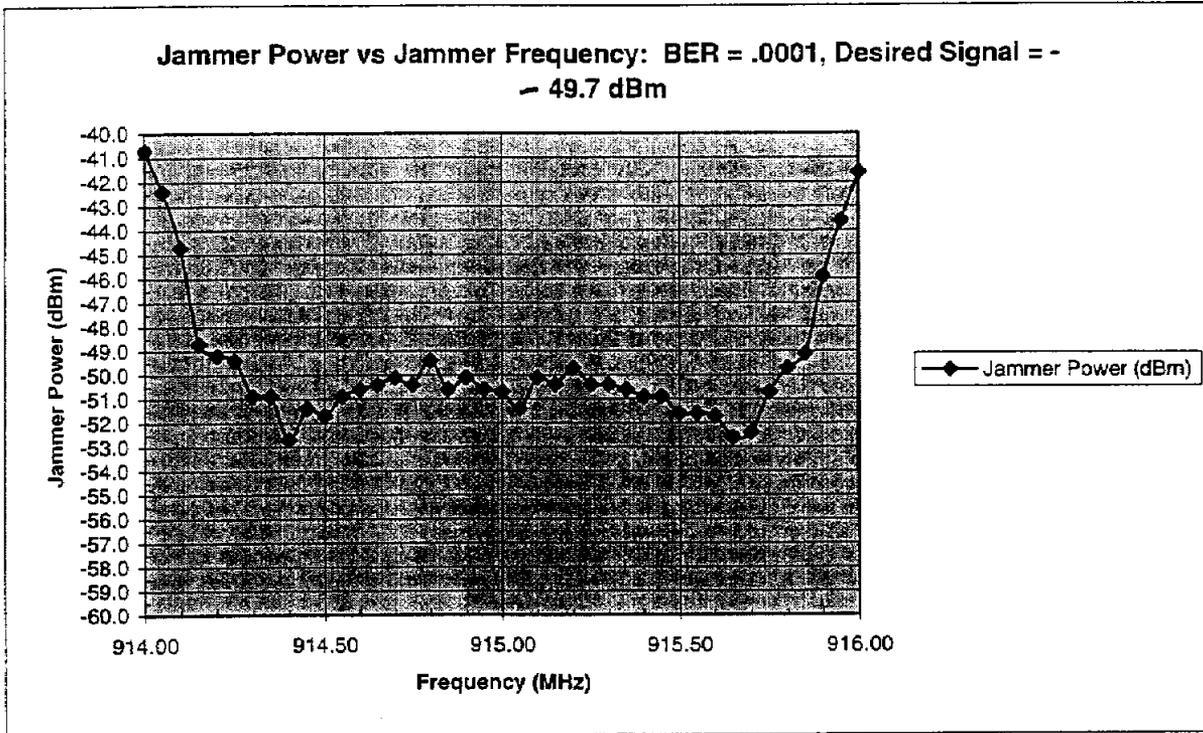
The test results represent the processing gain for both the portable and base units.

Refer to the attached data sheets for more details.

Process Gain

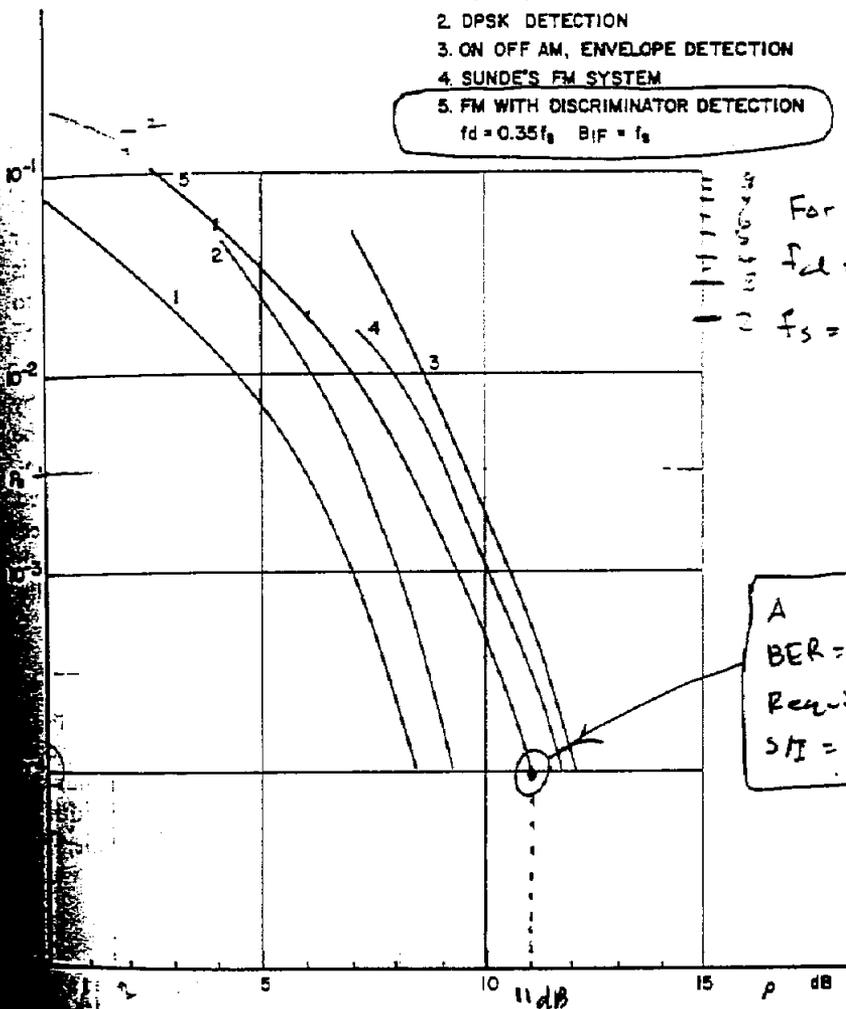
Fchannel = 915.00 MHz

Jammer Frequency (MHz)	Jammer Power (dBm)	Jammer to Signal Ratio J / S (dB)	Processing Gain (dB)
914.00	-40.7	9.0	22.0
914.05	-42.4	7.3	20.3
914.10	-44.7	5.0	18.0
914.15	-48.7	1.0	14.0
914.20	-49.2	0.5	13.5
914.25	-49.4	0.3	13.3
914.30	-50.9	-1.2	11.8
914.35	-50.9	-1.2	11.8
914.40	-52.7	-3.0	10.0
914.45	-51.4	-1.7	11.3
914.50	-51.7	-2.0	11.0
914.55	-50.9	-1.2	11.8
914.60	-50.6	-0.9	12.1
914.65	-50.4	-0.7	12.3
914.70	-50.1	-0.4	12.6
914.75	-50.4	-0.7	12.3
914.80	-49.4	0.3	13.3
914.85	-50.6	-0.9	12.1
914.90	-50.1	-0.4	12.6
914.95	-50.6	-0.9	12.1
915.00	-50.7	-1.0	12.0
915.05	-51.4	-1.7	11.3
915.10	-50.1	-0.4	12.6
915.15	-50.4	-0.7	12.3
915.20	-49.7	0.0	13.0
915.25	-50.4	-0.7	12.3
915.30	-50.4	-0.7	12.3
915.35	-50.6	-0.9	12.1
915.40	-50.9	-1.2	11.8
915.45	-50.9	-1.2	11.8
915.50	-51.6	-1.9	11.1
915.55	-51.6	-1.9	11.1
915.60	-51.7	-2.0	11.0
915.65	-52.6	-2.9	10.1
915.70	-52.4	-2.7	10.3
915.75	-50.7	-1.0	12.0
915.80	-49.7	0.0	13.0
915.85	-49.1	0.6	13.6
915.90	-45.9	3.8	16.8
915.95	-43.6	6.1	19.1
916.00	-41.6	8.1	21.1



Process Gain

1. COHERENT DETECTION BINARY AM
2. DPSK DETECTION
3. ON OFF AM, ENVELOPE DETECTION
4. SUNDE'S FM SYSTEM
5. FM WITH DISCRIMINATOR DETECTION
 $f_d = 0.35f_s$ $BIF = f_s$



For Our System
 $f_{cd} = 52.5 \text{ kHz}$
 $f_s = 1.5 \text{ M chips/s}$

A
 BER = 1×10^{-4}
 Requires
 $S/N = 11.0 \text{ dB}$

4.2-6 Error rate as a function of average transmitter power to noise ratio, S/N_0 .

peak frequency deviation is f_d . It is clear that $x(t)$ is no longer band
 Calculations show^{31, 32} that for small deviations, that is, $f_d < f_s/4$,
 spectrum of $x(t)$ is essentially contained in a narrow RF bandwidth of
 narrow-band system has been described by Salz^{32, 33} with $f_d = f_s/4$
 bandwidth of $1.5 f_s$. The transmitted wave was no longer strictly FM
 small amplitude fluctuations. With conventional limiter discrim-

4.0 Measurement Results

4.1 Conducted Output Power, FCC RULES 15.247(b):

Test Procedure

The antenna port of the EUT was connected to the input of a power meter. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

Test Equipment:

Digital Peak Power Meter	HP 8900D w/ 84811A sensor Frequency Range: 100kHz to 18 GHz Power Range: 300 μ W to 3W
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Frequency (MHz)	Base Output in dBm	Output in mWatt
Low Channel:	17.7	58.9
Middle Channel:	17.8	60.3
High Channel:	17.8	60.3

Cable loss: 1.3 dB added to raw Power Meter reading (i.e. Low Channel 16.4 + 1.3 = 17.7)

Intertek Testing Services

1365 Adams Court, Menlo Park, CA 94025

Sony Corporation, DSSS Cordless Phone
FCC ID: AK8SPPA9276

Date of Test: June 13-16, 2000
Models: SPP-A9276 & SPP-S9226

Handset		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel	18.3	67.6
Middle Channel:	18.2	66.0
High Channel:	17.9	61.7

Cable loss: 1.3 dB added to raw Power Meter reading (i.e. Low Channel 17.0 + 1.3 = 18.3)