

EXHIBIT D

CKC TEST REPORT



CERTIFICATION TEST REPORT

FOR THE

ACTIMATES ARTHUR, ACTIMATES DW

FCC PART 15 SUBPART C

COMPLIANCE

DATE OF ISSUE: MARCH 10, 1998

PREPARED FOR:

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

P.O. No:

W.O. No: 68,393

Report No: FC98-005

Date of test: December 5, 1997

DOCUMENTATION CONTROL:

Tracy Phillips
Tracy Phillips

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APPROVED BY:

Dennis Ward
Dennis Ward
Director of Laboratories
CKC Laboratories

PREPARED BY:

Monika Lopez
CKC Laboratories, Inc.
5473A Clouds Rest
Mariposa, CA 95338

TABLE OF CONTENTS

Administrative Information	3
Summary Of Results	4
Equipment Under Test (EUT) Description	4
Fundamental Frequency	4
Measurement Uncertainty	4
Peripheral Devices	4
Report Of Measurements	5
Table 1: Fundamental Field Strength	5
Table 2: Six Highest Radiated Emission Levels (9 kHz-30 MHz)	6
Table 3: Six Highest Radiated Emission Levels (30 MHz-1000 MHz)	7
Table A : List Of Test Equipment	8
Occupied Bandwidth Plot Unmodulated 1	9
Occupied Bandwidth Plot Modulated	10
EUT Setup	11
Test Instrumentation And Analyzer Settings	11
Table B : Analyzer Bandwidth Settings Per Frequency Range	11
Spectrum Analyzer Detector Functions	12
Peak	12
Quasi-Peak	12
Average	12
Test Methods	13
Radiated Emissions Testing	13
Frequency Stability	14
Occupied Bandwidth	14
Sample Calculations	15
Appendix A : Information About The Equipment Under Test	16
I/O Ports	17
Crystal Oscillators	17
Printed Circuit Boards	17
Required EUT Changes To Comply	17
Equipment Configuration Block Diagram	18
Photograph Showing Radiated Emissions	19
Photograph Showing Radiated Emissions	20
Appendix B : Measurement Data Sheets	21

ADMINISTRATIVE INFORMATION

DATE OF TEST: December 5, 1997

PURPOSE OF TEST: To demonstrate the compliance of the ActiMates Arthur, ActiMates DW with the FCC Part 15, Subpart C devices.

MANUFACTURER: Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

REPRESENTATIVE: Ann Bovee

TEST LOCATION: CKC Laboratories, Inc.
22105 Wilson River Hwy
Tillamook, OR 97141

TEST PERSONNEL: Mike Wilkinson

TEST METHOD: ANSI C63.4 1992

FREQUENCY RANGE TESTED: 9 kHz - 1000 MHz

EQUIPMENT UNDER TEST: ActiMates Arthur, ActiMates DW
Manuf: Microsoft
Model: ActiMates Arthur,
ActiMates DW
Serial:
FCC ID: C3KRT4

SUMMARY OF RESULTS

The Microsoft Corporation ActiMates Arthur, ActiMates DW was tested in accordance with ANSI C63.4 (1992) for compliance with Part 15, Subpart C of the FCC Rules.

As received, the above equipment was found to be fully compliant with the limits of Part 15, Subpart C requirements for radiated emissions.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The ActiMates Arthur, ActiMates DW.

FUNDAMENTAL FREQUENCY

49.860 MHz

MEASUREMENT UNCERTAINTY

Associated with data in this report is a ± 4 dB measurement uncertainty.

PERIPHERAL DEVICES

The EUT was not tested with peripheral devices.

REPORT OF MEASUREMENTS

The following tables report the highest emissions levels recorded during the tests performed on the ActiMates Arthur, ActiMates DW. The data sheets from which these tables were compiled are contained in Appendix B.

Table 1: Fundamental Field Strength

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
49.881	83.1	11.4	-28.1	1.2		67.6	80.0	-12.4	V
99.280	49.9	8.0	-27.9	2.0		32.0	43.5	-11.5	V
149.607	41.6	12.9	-27.6	2.5		29.4	43.5	-14.1	V
199.428	43.4	17.1	-27.3	3.0		36.2	43.5	-7.3	H
398.892	37.2	16.0	-27.7	5.1		30.6	46.0	-15.4	V
448.738	38.6	16.6	-28.2	4.7		31.7	46.0	-14.3	H

Test Method: ANSI C63.4 1992
Spec Limit : 15.235 (a)
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization
N = No Polarization
D = Dipole Reading
Q = Quasi Peak Reading
A = Average Reading

COMMENTS: Running test firmware in transmit only mode. Changed L-10 to 1.9 uH.

Table 2: Six Highest Radiated Emission Levels (9 kHz-30 MHz)

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V	SPEC LIMIT dB μ V	MARGIN dB	NOTES
		Lisn dB							
0.055440	48.2	10.7				58.9	72.7	-13.8	N
0.075680	49.4	10.6				60.0	70.0	-10.0	N
0.150180	47.6	10.3				57.9	64.1	-6.2	N
0.280000	42.7	10.5				53.2	58.7	-5.5	N
0.868400	32.9	10.7				43.6	48.8	-5.2	N
1.812000	25.7	10.5				36.2	49.5	-13.3	N

Test Method: ANSI C63.4 1992
Spec Limit : 15.209
Test Distance: No Distance

NOTES: Q = Quasi Peak Reading
A = Average Reading
B = Black Lead
W = White Lead

COMMENTS: Running test firmware in transmit only mode. Changed L-10 to 1.9 uH.
Frequency range tested was 9 kHz to 30 MHz.

Table 3: Six Highest Radiated Emission Levels (30 MHz-1000 MHz)

FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV/m	SPEC LIMIT dBμV/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
49.864	82.5	11.4	-28.1	1.2		67.0	80.0	-13.0	V
171.920	36.6	15.0	-27.6	2.7		26.7	43.5	-16.8	VQ
174.934	36.3	15.3	-27.6	2.8		26.8	43.5	-16.7	HQ
176.896	36.0	15.4	-27.6	2.8		26.6	43.5	-16.9	VQ
195.935	36.8	16.8	-27.3	3.0		29.3	43.5	-14.2	VQ
659.147	31.9	19.8	-28.2	5.7		29.2	46.0	-16.8	VQ

Test Method: ANSI C63.4 1992
Spec Limit : FCC B
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization
N = No Polarization
D = Dipole Reading
Q = Quasi Peak Reading
A = Average Reading

COMMENTS: Running test firmware in transmit only mode. Changed L-10 to 1.9 uH.

TABLE A

LIST OF TEST EQUIPMENT

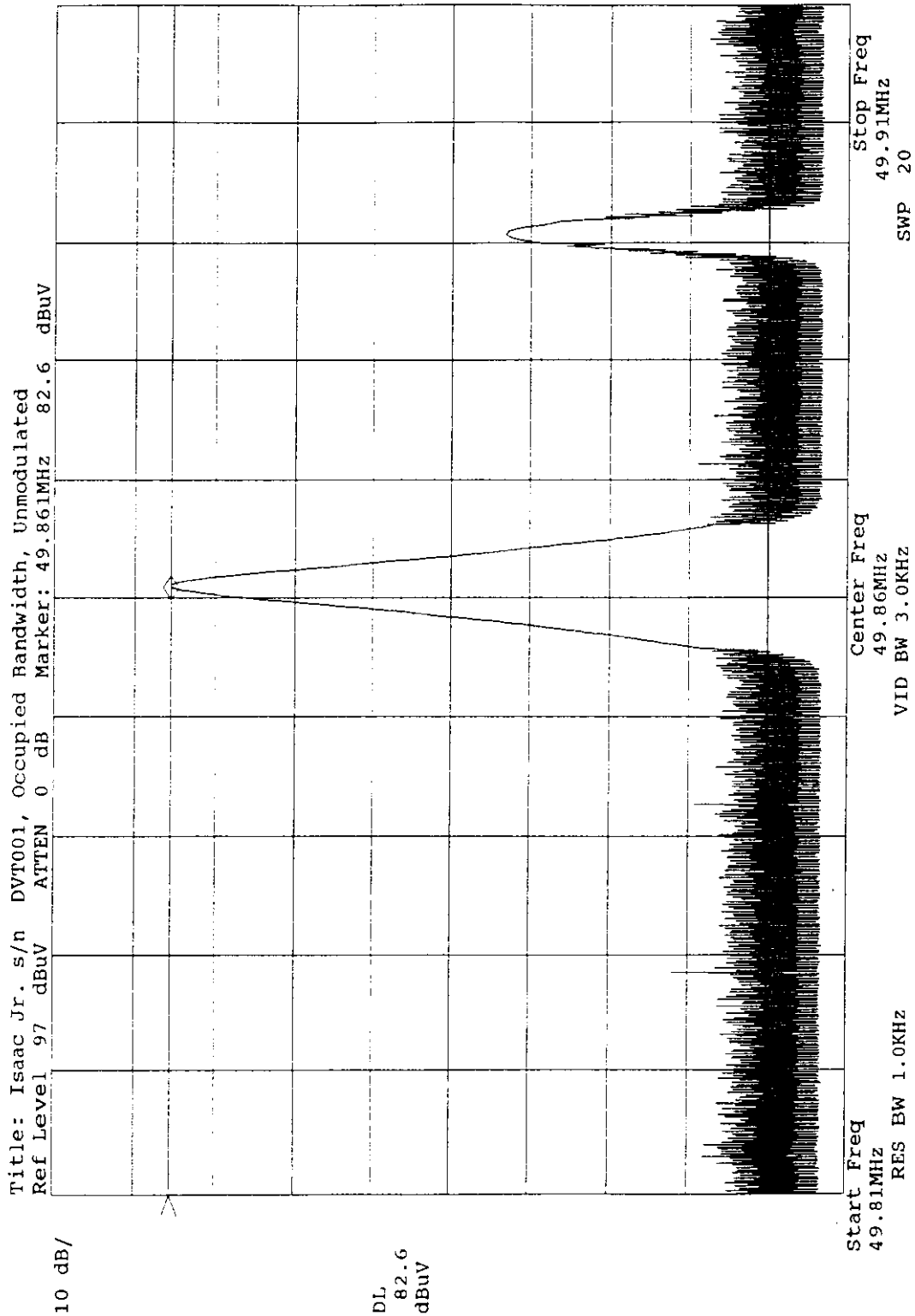
1. Spectrum Analyzer, Hewlett Packard, Model No. HP 8568A, S/N 2235A02426. Display section S/N 2237A04353. Calibration date: July 22, 1997. Calibration due date: July 22, 1998.
2. Preamp, Hewlett Packard, Model No. 8447D, S/N 2727A05444. Calibration date: July 9, 1997. Calibration due date: July 9, 1998.
3. Quasi-Peak Adapter, Hewlett Packard, Model No. 85650A, S/N 243A00433. Calibration date: March 25, 1997. Calibration due date: March 25, 1998.
4. Biconical Antenna, Schwartzbeck, Model No. BBA9106, S/N D6901. Calibration date: January 24, 1998. Calibration due date: January 24, 1999.
5. Log Periodic Antenna, A. & H. Systems, Model No. SAS200/510, S/N 463. Calibration date: August 26, 1997. Calibration due date: August 26, 1998.
6. Mag Loop, Elec. Mech., Model No. 6502, S/N 2156. Calibration date: August 5, 1997. Calibration due date: August 26, 1998.
7. LISN, Fischer, Model No. 8028-TS-50-BNC, S/N 374. Calibration date: July 22, 1997. Calibration due date: July 22, 1998.
8. Tillamook site B calibration date: February 10, 1997. Tillamook site B calibration due date: February 10, 1998.
9. Test software, EMI Test 2.86.



LABORATORIES, INC.

Occupied Bandwidth Plot Unmodulated

M. White 12-4-97





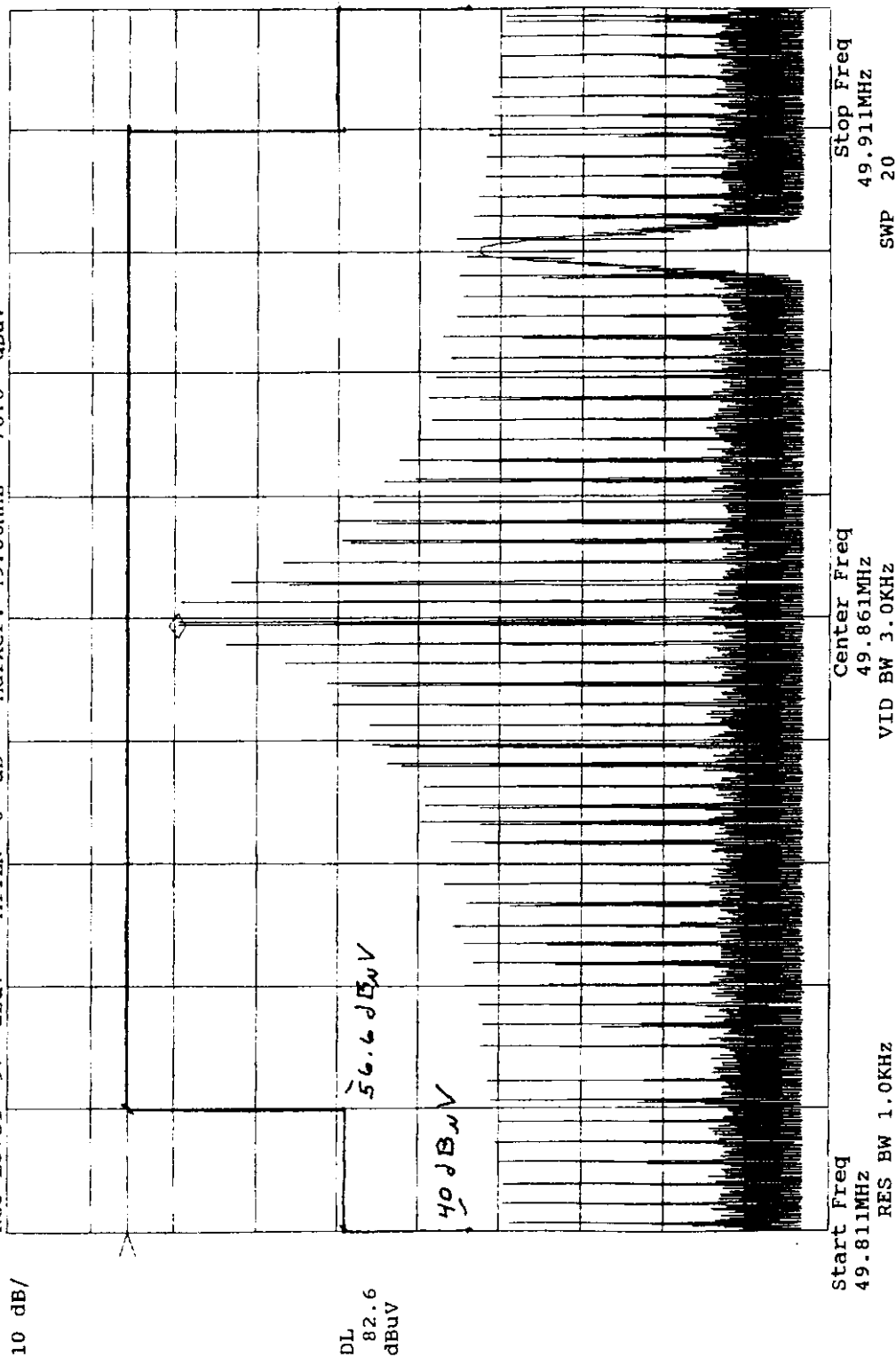
Testing the Future

LABORATORIES, INC.

Occupied Bandwidth Plot Modulated

W.D.K. 12-4-97

Title: Isaac Jr. s/n DVT001, Occupied Bandwidth, Modulated @ 1 kHz 50%
Ref Level 97 dBuV ATTN 0 dB Marker: 49.86MHz 76.6 dBuV



EUT SETUP

The equipment under test (EUT) listed was setup in a manner that represented its normal use. Any special conditions required for the EUT to operate normally are identified in the comments that accompany Tables 1 for fundamental field strength emissions, Tables 2 & 3 for radiated emissions.

During radiated emissions testing, the EUT was mounted on a nonconductive, rotating table 1 meter above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters. This configuration is typical for radiated emissions testing of table top devices.

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Table A were used to collect both the radiated and conducted emissions data for the ActiMates Arthur, ActiMates DW. For radiated measurements below 30 MHz, the mag loop antenna was used. For radiated measurements between 30 MHz - 300 MHz, the biconical antenna was used. For frequencies from 300 to 1000 MHz, the log periodic antenna was used. For antenna locations please refer to Tables 1-3 or the test data sheets contained in Appendix B.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dB μ V, and a vertical scale of 10 dB per division.

TABLE B : ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE

TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
RADIATED EMISSIONS	9 kHz	30 MHz	200 Hz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz

SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in Tables 1, 2 and 3 indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the six highest readings, this is indicated as a "Q" or an "A" in Table 1, Table 2 or Table 3. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data for the ActiMates Arthur, ActiMates DW.

Peak

In this mode, the Spectrum Analyzer or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the HP 85650A Quasi-Peak Adapter for the HP 8568B Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

Average

When the frequencies exceed 1 GHz, average measurements may be made using the spectrum analyzer. To make these measurements, the test engineer reduces the video bandwidth on the analyzer until the modulation of the signal is filtered out. At this point the analyzer is set into the linear mode and the scan time is reduced.

TEST METHODS

The radiated emissions data of the ActiMates Arthur, ActiMates DW was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the "Sample Calculations". The corrected data was then compared to the FCC Part 15, Subpart C emissions limits to determine compliance.

Preliminary and final measurements were taken in order to better ensure that all emissions from the EUT were found and maximized.

Radiated Emissions Testing

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode facing the antenna. The frequency range of 9 kHz – 30 MHz was scanned with the mag loop antenna. The frequency range of 30 MHz - 88 MHz was then scanned with the biconical antenna located about 1.5 meter above the ground plane in the vertical configuration. During this scan, the turntable was rotated and all peaks which were at or near the limit were recorded. The frequency range of 100 - 300 MHz was scanned with the biconical antenna in the same manner, and the peaks recorded. Lastly, a scan of the FM band from 88 - 110 MHz was made, using a reduced resolution bandwidth and a reduced frequency span. The biconical antenna was changed to the horizontal polarity and the above steps were repeated. After changing to the log periodic antenna in the horizontal configuration, the frequency range of 300 - 1000 MHz was scanned. The log periodic antenna was changed to the vertical polarity and the frequency range of 300 - 1000 MHz was again scanned. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

For the final radiated scan, the equipment was again positioned facing the antenna. A thorough scan of all frequencies was manually made using a small frequency span, rotating the turntable as needed. Comparison with the previously recorded measurements was then made.

Using the peak readings from both scans as a guide, the test engineer then maximized the readings with respect to the table rotation and antenna height. Maximizing of the EUT was achieved by monitoring the spectrum analyzer on a closed circuit television monitor while the EUT was being moved and rearranged on the EUT table for maximum emissions. Photographs showing the final worst case configuration of the EUT are contained in Appendix A.

FCC Part 15.31(e) - Frequency Stability Measurements

In accordance with Part 15.31(e), since the unit was battery operated, a fresh battery was inserted.

Frequency Range of Transmitter: 49.860 MHz

In accordance with Part 15.235(a), the field strength of the emissions within the 49.82-49.90 MHz band did not exceed 10,000 microvolts/meter at 3 meters. The emission limit in was based on the measurement instrumentation employing an average detector. The provisions in 15.35 for limiting peak emissions apply.

FCC Part 15.235- Occupied Bandwidth Measurements

In accordance with Part 15.235(b), the field strength of the emissions between the band edges and up to 10 kHz above and below the band edges were attenuated 26 dB below the level of the unmodulated carrier. The field strength of the emissions removed by more than 10 kHz from the band edges did not exceed the general radiated emission limits in 15.209. Please refer to the occupied bandwidth plots for test results.

SAMPLE CALCULATIONS

The basic spectrum analyzer reading was converted using correction factors as shown in the six highest emissions readings in Tables 1, 2 and 3. For radiated emissions in dB μ V/m, the spectrum analyzer reading in dB μ V was corrected by using the following formula:

$$\begin{aligned}
 &\text{Meter reading (dB}\mu\text{V)} \\
 &+ \text{Antenna Factor (dB)} \\
 &+ \text{Cable Loss (dB)} \\
 &- \text{Distance Correction (dB)} \\
 &- \text{Pre-amplifier Gain (dB)} \\
 &= \text{Corrected Reading (dB}\mu\text{V/m)}
 \end{aligned}$$

This reading was then compared to the applicable specification limit to determine compliance.

A typical data sheet will display the following in column format:

#	Freq MHz	Rdng dB μ V	Cable	Amp B	Magne	Site	Log B	Dist	Corr dB μ V/ m	Spec	Margin	Polar
---	-------------	--------------------	-------	----------	-------	------	----------	------	--------------------------	------	--------	-------

means reading number

Freq MHz is the frequency in MHz of the obtained reading.

Rdng dB μ V is the reading obtained on the spectrum analyzer in dB μ V.

Amp. is short for the preamplifier factor or gain in dB.

Magne is the mag loop antenna factor in dB.

Site is the biconical antenna factor in dB.

Log B is the log periodic antenna factor in dB.

Cable is the cable loss in dB of the coaxial cable on the OATS.

Dist is the distance factor (in dB). It is used when testing at a different test distance than the one stated in the spec.

Corr dB μ V/m is the corrected reading which is now in dB μ V/m (field strength).

Spec is the specification limit (dB) stated in the agency's regulations.

Margin is the closeness to the specified limit in dB; + is over and - is under the limit.

Polar is the Polarity of the antenna with respect to earth.

APPENDIX A
INFORMATION ABOUT THE EQUIPMENT UNDER TEST

INFORMATION ABOUT THE EQUIPMENT UNDER TEST

Test Software/Firmware:
CRT was displaying:
Power Supply Manufacturer:
Power Supply Part Number:
AC Line Filter Manufacturer:
AC Line Filter Part Number:

The AC power cord is removable and is shielded

Battery Operated

I/O PORTS

Type	#

CRYSTAL OSCILLATORS

Type	Freq. In MHz
Microprocessor	10
Fo	49.860
Lo	49.405
Clock	32.768

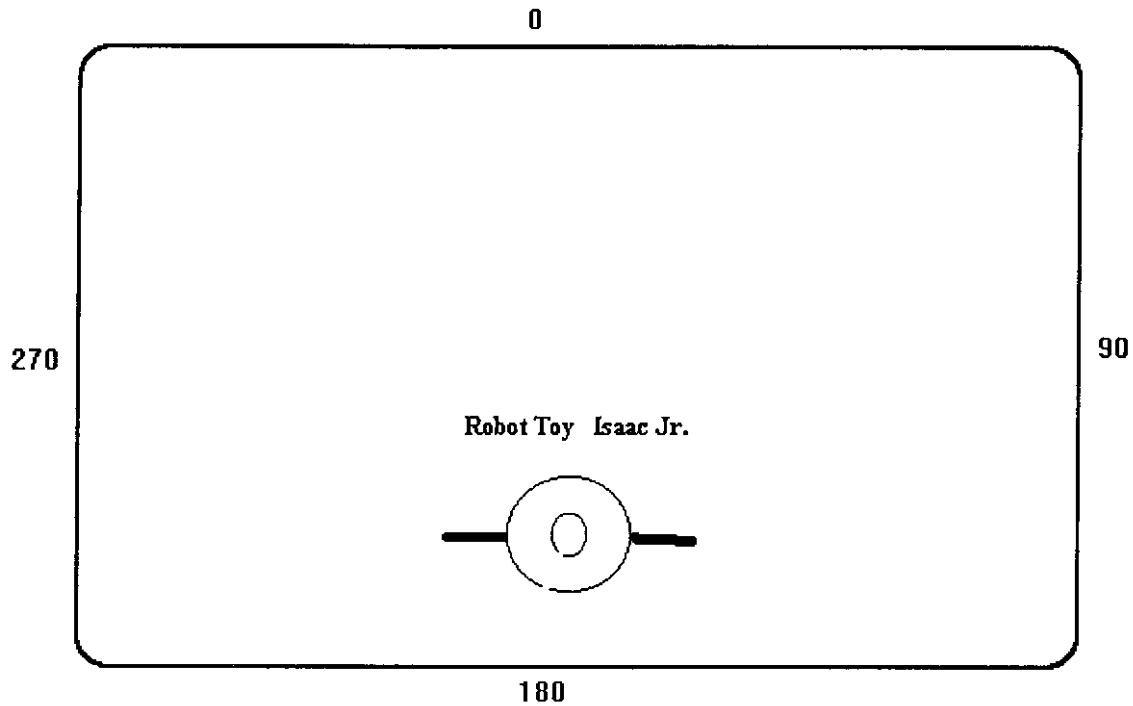
PRINTED CIRCUIT BOARDS

Function	Model & Rev	Clocks, MHz	Layers	Location

REQUIRED EUT CHANGES TO COMPLY:

None

EQUIPMENT CONFIGURATION BLOCK DIAGRAM



NOTES:

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Applicant: Microsoft Corporation
Equipment: ActiMates Arthur, ActiMates DW
Model Number:



Radiated Emissions - Front View

NOTES:

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Applicant: Microsoft Corporation
Equipment: ActiMates Arthur, ActiMates DW
Model Number:



Radiated Emissions - Back View

NOTES:

APPENDIX B
MEASUREMENT DATA SHEETS

Test Location: CKC LABORATORIES INC. • 22105 WILSON RIV. HWY SITE B • TILLAMOOK, OR
97141 • (503)-842-5577

Customer: **MICROSOFT CORP.** Date: Dec-04-97
Specification: **FCC B RADIATED** Time: 16:24
Test Type: **Fundamental Field Strenght** Sequence#: 3
Equipment: **Robot Toy**
Manufacturer: Microsoft Tested By: Mike Wilkinson
Model: Isaac Jr.
S/N: DVT001

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Robot Toy*	Microsoft	Isaac Jr.	DVT001

Support Devices:

Function	Manufacturer	Model #	S/N
None			

Test Conditions / Notes:

Running test firmware in transmit only mode. Changed L-10 to 1.9 uH.
--

Measurement Data: Sorted by Margin Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	Amp-B dB	Site dB	Cable dB	Dist dB	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar
1	199.428	43.4	-27.3	+17.1	+3.0	+0.0	36.2	43.5	-7.3	Horiz
			+0.0							
2	99.280	49.9	-27.9	+8.0	+2.0	+0.0	32.0	43.5	-11.5	Vert
			+0.0							
3	49.881	83.1	-28.1	+11.4	+1.2	+0.0	67.6	80.0	-12.4	Vert
			+0.0							
4	149.607	41.6	-27.6	+12.9	+2.5	+0.0	29.4	43.5	-14.1	Vert
			+0.0							
5	149.567	41.5	-27.6	+12.9	+2.5	+0.0	29.3	43.5	-14.2	Horiz
			+0.0							
6	448.738	38.6	-28.2	+0.0	+4.7	+0.0	31.7	46.0	-14.3	Horiz
			+16.6							
7	398.892	37.2	-27.7	+0.0	+5.1	+0.0	30.6	46.0	-15.4	Vert
			+16.0							
8	199.482	35.3	-27.3	+17.1	+3.0	+0.0	28.1	43.5	-15.4	Horiz
			+0.0							
9	398.906	35.3	-27.7	+0.0	+5.1	+0.0	28.7	46.0	-17.3	Vert
			+16.0							
10	49.876	77.1	-28.1	+11.4	+1.2	+0.0	61.6	80.0	-18.4	Vert
			+0.0							
11	99.742	42.8	-27.9	+8.0	+2.0	+0.0	24.9	43.5	-18.6	Vert
			+0.0							

Test Location: CKC LABORATORIES INC. • 22105 WILSON RIV. HWY SITE B • TILLAMOOK, OR 97141 • (503)-842-5577

Customer: **MICROSOFT CORP.**
Specification: **fcc15209.lim**
Test Type: **Maximized Emissions**
Equipment: **Robot Toy**
Manufacturer: **Microsoft**
Model: **Isaac Jr.**
S/N: **DVT001**

Date: Dec-05-97
Time: 16:42
Sequence#: 6
Tested By: Mike Wilkinson

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Robot Toy*	Microsoft	Isaac Jr.	DVT001

Support Devices:

Function	Manufacturer	Model #	S/N
None			

Test Conditions / Notes:

Running test firmware in transmit only mode. Changed L-10 to 1.9 uH. Frequency range tested was 9 kHz to 30 MHz.

Measurement Data:

Sorted by Margin

Test Distance: 3 Meters

#	Freq	Rdng dBμV	Magne				Dist dB	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar
			dB	dB	dB	dB					
1	868.400k	32.9	+10.7				+0.0	43.6	48.8	-5.2	None
2	280.000k	42.7	+10.5				+0.0	53.2	58.7	-5.5	None
3	150.180k	47.6	+10.3				+0.0	57.9	64.1	-6.2	None
4	75.680k	49.4	+10.6				+0.0	60.0	70.0	-10.0	None
5	1.812M	25.7	+10.5				+0.0	36.2	49.5	-13.3	None
6	55.440k	48.2	+10.7				+0.0	58.9	72.7	-13.8	None
7	20.450k	42.2	+13.1				+0.0	55.3	81.4	-26.1	None

Test Location: CKC LABORATORIES INC. • 22105 WILSON RIV. HWY SITE B • TILLAMOOK, OR
97141 • (503)-842-5577

Customer: MICROSOFT CORP.
Specification: FCC B RADIATED
Test Type: Maximized Emissions
Equipment: Robot Toy
Manufacturer: Microsoft
Model: Isaac Jr.
S/N: DVT001

Date: Dec-05-97
Time: 09:32
Sequence#: 5
Tested By: Mike Wilkinson

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Robot Toy*	Microsoft	Isaac Jr.	DVT001

Support Devices:

Function	Manufacturer	Model #	S/N
None			

Test Conditions / Notes:

Running test firmware in transmit only mode. Changed L-10 to 1.9 uH.

Measurement Data:

Sorted by Margin

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	Amp-B		Site	Cable	Dist dB	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar
			dB	dB	dB	dB					
1	49.864	82.5		-28.1	+11.4	+1.2	+0.0	67.0	80.0	-13.0	Vert
			+0.0								
2	195.935	36.8		-27.3	+16.8	+3.0	+0.0	29.3	43.5	-14.2	Vert
	Quasi Peak		+0.0								
3	174.934	36.3		-27.6	+15.3	+2.8	+0.0	26.8	43.5	-16.7	Horiz
	Quasi Peak		+0.0								
4	659.147	31.9		-28.2	+0.0	+5.7	+0.0	29.2	46.0	-16.8	Vert
	Quasi Peak		+19.8								
5	171.920	36.6		-27.6	+15.0	+2.7	+0.0	26.7	43.5	-16.8	Vert
	Quasi Peak		+0.0								
6	176.896	36.0		-27.6	+15.4	+2.8	+0.0	26.6	43.5	-16.9	Vert
	Quasi Peak		+0.0								
7	872.448	27.3		-27.8	+0.0	+6.9	+0.0	29.0	46.0	-17.0	Vert
	Quasi Peak		+22.6								
8	171.995	36.3		-27.6	+15.0	+2.7	+0.0	26.4	43.5	-17.1	Horiz
	Quasi Peak		+0.0								
9	699.980	28.2		-28.1	+0.0	+6.2	+0.0	26.9	46.0	-19.1	Horiz
	Quasi Peak		+20.6								
10	922.044	24.0		-27.6	+0.0	+7.2	+0.0	26.9	46.0	-19.1	Vert
	Quasi Peak		+23.3								
11	232.047	32.2		-27.2	+18.4	+3.4	+0.0	26.8	46.0	-19.2	Vert
	Quasi Peak		+0.0								

12	766.779	27.0	-27.8	+0.0	+6.3	+0.0	26.6	46.0	-19.4	Vert
	Quasi Peak	+21.1								
13	747.674	26.9	-27.8	+0.0	+6.3	+0.0	26.3	46.0	-19.7	Horiz
	Quasi Peak	+20.9								
14	388.208	31.8	-27.6	+0.0	+5.2	+0.0	25.9	46.0	-20.1	Horiz
	Quasi Peak	+16.5								
15	442.755	32.5	-28.1	+0.0	+4.9	+0.0	25.8	46.0	-20.2	Horiz
	Quasi Peak	+16.5								
16	442.705	32.5	-28.1	+0.0	+4.9	+0.0	25.8	46.0	-20.2	Vert
	Quasi Peak	+16.5								
17	149.814	35.4	-27.6	+12.9	+2.5	+0.0	23.2	43.5	-20.3	Vert
	Quasi Peak	+0.0								
18	321.308	28.1	-27.2	+0.0	+4.2	+0.0	25.6	46.0	-20.4	Vert
	Quasi Peak	+20.5								
19	290.277	27.3	-27.1	+20.8	+3.8	+0.0	24.8	46.0	-21.2	Horiz
	Quasi Peak	+0.0								
20	563.701	28.9	-28.3	+0.0	+5.4	+0.0	24.2	46.0	-21.8	Horiz
	Quasi Peak	+18.2								
21	534.581	29.1	-28.3	+0.0	+5.1	+0.0	23.7	46.0	-22.3	Vert
	Quasi Peak	+17.8								
22	421.112	29.7	-27.9	+0.0	+4.7	+0.0	22.7	46.0	-23.3	Vert
	Quasi Peak	+16.2								
23	401.415	28.4	-27.7	+0.0	+5.0	+0.0	21.6	46.0	-24.4	Vert
		+15.9								
24	235.806	25.7	-27.2	+18.6	+3.3	+0.0	20.4	46.0	-25.6	Horiz
	Quasi Peak	+0.0								
25	93.513	36.0	-27.9	+7.8	+1.9	+0.0	17.8	43.5	-25.7	Vert
	Quasi Peak	+0.0								
26	509.653	25.8	-28.4	+0.0	+5.0	+0.0	19.8	46.0	-26.2	Horiz
	Quasi Peak	+17.4								
27	140.827	29.0	-27.7	+12.3	+2.4	+0.0	16.0	43.5	-27.5	Vert
	Quasi Peak	+0.0								
28	97.654	31.2	-27.9	+7.9	+2.0	+0.0	13.2	43.5	-30.3	Vert
	Quasi Peak	+0.0								