

EMC

TEST REPORT

REPORT NO. : F87081802
MODEL NO. : CA-1454, CX-1454, XT-4881
DATE OF TEST : Dec. 20, 1998

PREPARED FOR : ACTION ELECTRONICS CO., LTD.

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ADVANCE DATA TECHNOLOGY CORPORATION

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PREPARED BY:
NVLAP
Accredited Laboratory

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1. CERTIFICATION

Issue Date: Dec. 22, 1998

Product	:	COLOR MONITOR
Trade Name	:	AXION, HENNESSY, MAXTECH, ICON
Model No.	:	CA-1454, CX-1454, XT-4881
Applicant	:	ACTION ELECTRONICS CO., LTD.
Standard	:	FCC Part 15, Subpart B, Class B

ANSI C63.4-1992
CISPR 22:1993+A1:1995+A2:1997

We hereby certify that one sample of the designation has been tested in our facility on Dec. 20, 1998. The test record, data evaluation and Equipment Under Test (EUT) configurations represent herein are true and accurate representation of the measurements of the sample's EMC characteristics under the conditions herein specified.

The test results show that the EUT as described in this report is in compliance with the Class B limits of conducted and radiated emission of applicable standards.

TESTED BY:

Chris Yang

(Chris Yang)

DATE:

12/22/98

CHECKED BY:

Yenny Soong

(Yenny Soong)

DATE:

12/22/98

APPROVED BY:

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12/22/98

ADVANCE DATA TECHNOLOGY CORPORATION

NVLAP

Accredited Laboratory



4.3 TEST DATA OF CONDUCTED EMISSION

EUT: COLOR MONITOR

MODEL: CX-1454

MODE: 1024x768 (48 KHz)

6 dB Bandwidth: 10 KHz

Freq.	L Level	N Level	Limit	Margin [dB (μV)]
[MHz]	[dB (μV)]	[dB (μV)]	[dB (μV)]	L
	QP	AV	QP	AV
0.150	59.50	50.30	60.20	49.10
0.193	56.10	51.60	55.80	48.70
0.822	29.80	-	33.70	-
5.963	41.20	-	38.90	-
10.133	42.70	-	37.20	-
16.379	42.10	-	43.80	-
			60.00	50.00
			60.00	50.00
			56.00	46.00
			53.91	43.91
			50.00	40.00
			46.00	36.00
			42.10	32.10
			38.90	28.90
			35.70	25.70
			32.70	22.70
			29.80	19.80
			26.2	16.2
			22.3	12.3
			18.8	8.8
			17.3	7.3
			17.9	6.9
			16.2	5.2
			14.5	3.5
			12.8	1.8
			11.1	0.1
			9.4	-1.6
			7.7	-3.3
			6.0	-5.0
			4.3	-6.7
			2.6	-8.4
			0.9	-10.1
			-0.8	-11.8
			-2.5	-13.5
			-4.2	-15.2
			-5.9	-16.9
			-7.6	-18.6
			-9.3	-20.3
			-11.0	-22.0
			-12.7	-23.7
			-14.4	-25.4
			-16.1	-27.1
			-17.8	-28.8
			-19.5	-30.5
			-21.2	-32.2
			-22.9	-33.9
			-24.6	-35.6
			-26.3	-37.3
			-28.0	-39.0
			-29.7	-40.7
			-31.4	-42.4
			-33.1	-44.1
			-34.8	-45.8
			-36.5	-47.5
			-38.2	-49.2
			-39.9	-50.9
			-41.6	-52.6
			-43.3	-54.3
			-45.0	-56.0
			-46.7	-57.7
			-48.4	-59.4
			-50.1	-61.1
			-51.8	-62.8
			-53.5	-64.5
			-55.2	-66.2
			-56.9	-67.9
			-58.6	-69.6
			-60.3	-71.3
			-62.0	-73.0
			-63.7	-74.7
			-65.4	-76.4
			-67.1	-78.1
			-68.8	-79.8
			-70.5	-81.5
			-72.2	-83.2
			-73.9	-84.9
			-75.6	-86.6
			-77.3	-88.3
			-79.0	-90.0
			-80.7	-91.7
			-82.4	-93.4
			-84.1	-95.1
			-85.8	-96.8
			-87.5	-98.5
			-89.2	-100.2
			-90.9	-101.9
			-92.6	-103.6
			-94.3	-105.3
			-96.0	-107.0
			-97.7	-108.7
			-99.4	-110.4
			-101.1	-112.1
			-102.8	-113.8
			-104.5	-115.5
			-106.2	-117.2
			-107.9	-118.9
			-109.6	-120.6
			-111.3	-122.3
			-113.0	-124.0
			-114.7	-125.7
			-116.4	-127.4
			-118.1	-129.1
			-119.8	-130.8
			-121.5	-132.5
			-123.2	-134.2
			-124.9	-135.9
			-126.6	-137.6
			-128.3	-139.3
			-130.0	-141.0
			-131.7	-142.7
			-133.4	-144.4
			-135.1	-146.1
			-136.8	-147.8
			-138.5	-149.5
			-140.2	-151.2
			-141.9	-152.9
			-143.6	-154.6
			-145.3	-156.3
			-147.0	-158.0
			-148.7	-159.7
			-150.4	-161.4
			-152.1	-163.1
			-153.8	-164.8
			-155.5	-166.5
			-157.2	-168.2
			-158.9	-169.9
			-160.6	-171.6
			-162.3	-173.3
			-164.0	-175.0
			-165.7	-176.7
			-167.4	-178.4
			-169.1	-180.1
			-170.8	-181.8
			-172.5	-183.5
			-174.2	-185.2
			-175.9	-186.9
			-177.6	-188.6
			-179.3	-190.3
			-181.0	-192.0
			-182.7	-193.7
			-184.4	-195.4
			-186.1	-197.1
			-187.8	-198.8
			-189.5	-200.5
			-191.2	-202.2
			-192.9	-203.9
			-194.6	-205.6
			-196.3	-207.3
			-198.0	-209.0
			-199.7	-210.7
			-201.4	-212.4
			-203.1	-214.1
			-204.8	-215.8
			-206.5	-217.5
			-208.2	-219.2
			-209.9	-220.9
			-211.6	-222.6
			-213.3	-224.3
			-215.0	-226.0
			-216.7	-227.7
			-218.4	-229.4
			-220.1	-231.1
			-221.8	-232.8
			-223.5	-234.5
			-225.2	-236.2
			-226.9	-237.9
			-228.6	-239.6
			-230.3	-241.3
			-232.0	-243.0
			-233.7	-244.7
			-235.4	-246.4
			-237.1	-248.1
			-238.8	-249.8
			-240.5	-251.5
			-242.2	-253.2
			-243.9	-254.9
			-245.6	-256.6
			-247.3	-258.3
			-249.0	-260.0
			-250.7	-261.7
			-252.4	-263.4
			-254.1	-265.1
			-255.8	-266.8
			-257.5	-268.5
			-259.2	-270.2
			-260.9	-271.9
			-262.6	-273.6
			-264.3	-275.3
			-266.0	-277.0
			-267.7	-278.7
			-269.4	-280.4
			-271.1	-282.1
			-272.8	-283.8
			-274.5	-285.5
			-276.2	-287.2
			-277.9	-288.9
			-279.6	-290.6
			-281.3	-292.3
			-283.0	-294.0
			-284.7	-295.7
			-286.4	-297.4
			-288.1	-299.1
			-289.8	-300.8
			-291.5	-302.5
			-293.2	-304.2
			-294.9	-305.9
			-296.6	-307.6
			-298.3	-309.3
			-300.0	-311.0
			-301.7	-312.7
			-303.4	-314.4
			-305.1	-316.1
			-306.8	-317.8
			-308.5	-319.5
			-310.2	-321.2
			-311.9	-322.9
			-313.6	-324.6
			-315.3	-326.3
			-317.0	-328.0
			-318.7	-329.7
			-320.4	-331.4
			-322.1	-333.1
			-323.8	-334.8
			-325.5	-336.5
			-327.2	-338.2
			-328.9	-339.9
			-330.6	-341.6
			-332.3	-343.3
			-334.0	-345.0
			-335.7	-346.7
			-337.4	-348.4
			-339.1	-350.1
			-340.8	-351.8
			-342.5	-353.5
			-344.2	-355.2
			-345.9	-356.9
			-347.6	-358.6
			-349.3	-360.3
			-351.0	-362.0
			-352.7	-363.7
			-354.4	-365.4
			-356.1	-367.1
			-357.8	-368.8
			-359.5	-370.5
			-361.2	-372.2
			-362.9	-373.9
			-364.6	-375.6
			-366.3	-377.3
			-368.0	-379.0
			-369.7	-380.7
			-371.4	-382.4
			-373.1	-384.1
			-374.8	-385.8
			-376.5	-387.5
			-378.2	-389.2
			-379.9	-390.9
			-381.6	-392.6
			-383.3	-394.3
			-385.0	-396.0
			-386.7	-397.7
			-388.4	-399.4
			-390.1	-401.1
			-391.8	-402.8
			-393.5	-404.5
			-395.2	-406.2
			-396.9	-407.9
			-398.6	-409.6
			-400.3	-411.3
			-402.0	-413.0
			-403.7	-414.7
			-405.4	-416.4
			-407.1	-418.1
			-408.8	-419.8
			-410.5	-421.5
			-412.2	-423.2
			-413.9	-424.9
			-415.6	-426.6
			-417.3	-428.3
			-419.0	-430.0
			-420.7	-431.7
			-422.4	-433.4
			-424.1	-435.1
			-425.8	-436.8
			-427.5	-438.5
			-429.2	-440.2
			-430.9	-441.9
			-432.6	-443.6
			-434.3	-445.3
			-436.0	-447.0
			-437.7	-448.7
			-439.4	-450.4
			-441.1	-452.1
			-442.8	-453.8
			-444.5	-455.5
			-446.2	-457.2
			-447.9	-458.9
			-449.6	-460.6
			-451.3	-462.3
			-453.0	-464.0
			-454.7	-465.7
			-456.4	-467.4
			-458.1	-469.1
			-459.8	-470.8
			-461.5	-472.5
			-463.2	-474.2
			-464.9	-475.9
			-466.6	-477.6
			-468.3	-479.3
			-470.0	-481.0
			-471.7	-482.7
			-473.4	-484.4
			-475.1	-486.1
			-476.8	-487.8
			-478.5	-489.5
			-480.2	-491.2
			-481.9	-492.9
			-483.6	-494.6
			-485.3	-496.3
			-487.0	-498.0
			-488.7	-499.7
			-490.4	-501.4
			-492.1	-503.1
			-493.8	-504.8
			-495.5	-506.5
			-497.2	-508.2
			-498.9	-509.9
			-500.6	-511.6
			-502.3	-513.3
			-504.0	-515.0
			-505.7	-516.7
			-507.4	-518.4
			-509.1	-520.1
			-510.8	-521.8
			-512.5	-523.5
			-514.2	-525.2



4. TEST RESULTS (EMISSION)

4.1 RADIO DISTURBANCE

Frequency Range	:	0.15 - 30 MHz (Conducted Emission)
	:	30 - 1000 MHz (Radiated Emission)
Input Voltage	:	120 Vac, 60 Hz
Temperature	:	30 °C
Humidity	:	64 %
Atmospheric Pressure	:	998 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -2.3 dB at 0.193 MHz Minimum passing margin of radiated emission: -5.1 dB at 45.00 MHz

Note: The EUT was pretested under the following resolution & horizontal synchronization speed mode:

- * 800x600 mode (54 KHz),
- * 1024x768 mode (48 KHz),
- * 640x480 mode (31.5 KHz)

The worst emission levels were found under 1024x768 (48 KHz) and therefore the test data of only this mode is recorded.

4.2 EUT OPERATION CONDITION

1. Turn on the power of all equipments.
2. PC runs a test program to enable all functions.
3. PC reads and writes messages from FDD and HDD.
4. PC sends "H" messages to monitor (EUT) and monitor displays "H" patterns on screen.
5. PC sends "H" messages to modem.
6. PC sends "H" messages to printer, and the printer prints them on paper.
7. Repeat steps 3-7.



4.4 TEST DATA OF RADIATED EMISSION

EUT: COLOR MONITORMODEL: CX-1454MODE: 1024x768 (48 kHz)ANTENNA: CHASE BILOG CBL6112POLARITY: HorizontalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 M

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
48.10	11.4	8.9	20.3	30.0	-9.7
86.35	9.8	10.7	20.5	30.0	-9.5
120.04	15.1	6.3	21.4	30.0	-8.6
143.00	13.9	8.8	22.7	30.0	-7.3
214.80	14.0	7.2	21.2	30.0	-8.8
248.50	15.6	10.1	25.7	37.0	-11.3

- REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB/m) + Meter Reading (dBuV).
 2. Correction Factor (dB/m) = Ant. Factor (dB/m) + Cable loss (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level - Limit value



TEST DATA OF RADIATED EMISSION

EUT: COLOR MONITORMODEL: CX-1454MODE: 1024x768 (48 kHz)ANTENNA: CHASE BILOG CBL6112POLARITY: VerticalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 M

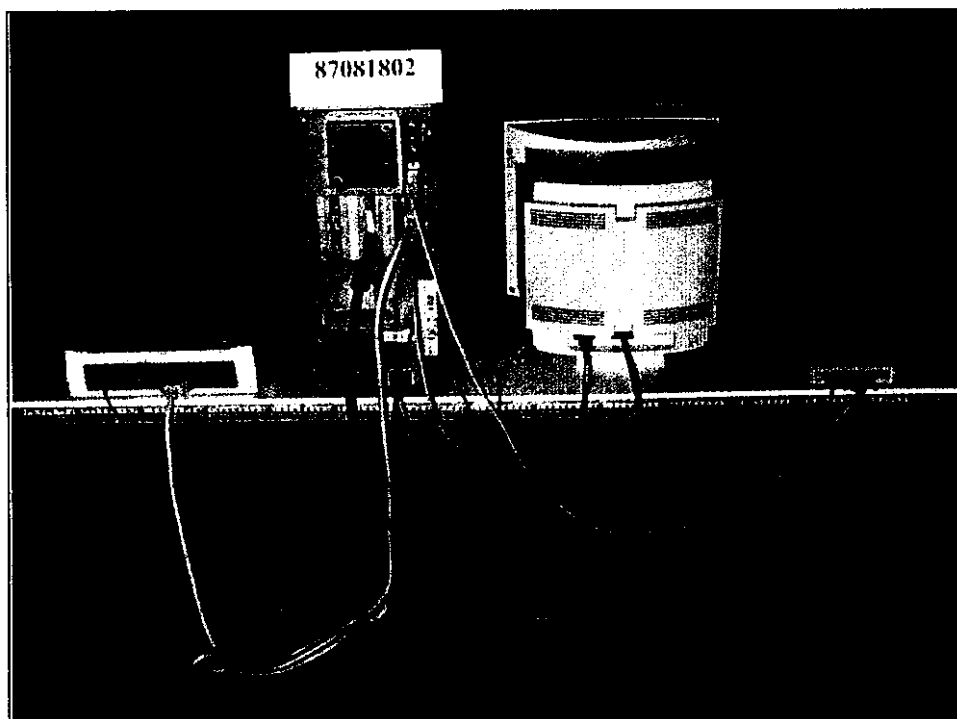
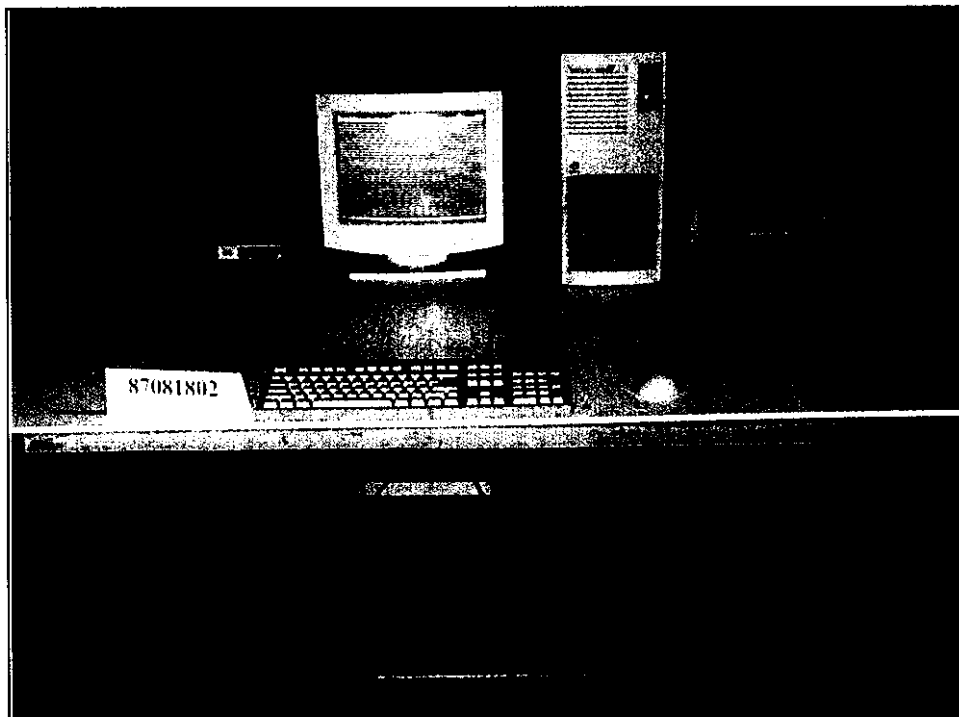
Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
45.00	11.8	13.1	24.9	30.0	-5.1
84.77	9.6	13.4	23.0	30.0	-7.0
114.34	14.2	7.9	22.1	30.0	-7.9
130.35	15.3	6.5	21.8	30.0	-8.2
154.63	12.8	7.5	20.3	30.0	-9.7
248.55	15.5	8.0	23.5	37.0	-13.5

- REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB/m) + Meter Reading (dBuV).
 2. Correction Factor (dB/m) = Ant. Factor (dB/m) + Cable loss (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level - Limit value



**5. PHOTOGRAPHS OF THE TEST CONFIGURATION WITH
MINIMUM MARGIN**

RADIATED EMISSION TEST





CONDUCTED EMISSION TEST

