FCC ID: IAWX21C002

EMC

TEST REPORT

REPORT NO. : F87102804
MODEL NO. : X21C002, XJ930, DJ930
XJ930U, DJ930U, XJ910,
DJ910, XJ910U, DJ910U
DATE OF TEST : Oct. 31 , 1998

PREPARED FOR : MAG TECHNOLOGY CO., LTD.

ADDRESS : 9F, 245, SEC. 1, TUNHWA S. RD.,
TAIPEI, TAIWAN, R.O.C.

PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION

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FCC ID: IAWX21C002

1. CERTIFICATION

Issue Date: Nov. 07, 1998

Product	:	COLOR MONITOR
Trade Name	:	MAG
Model No.	:	X21C002, XJ930, DJ930, XJ930U, DJ930U XJ910, DJ910, XJ910U, DJ910U
Applicant	:	MAG TECHNOLOGY CO., LTD.
Standard	:	FCC Part 15, Subpart B, Class B ANSI C63.4-1992 CISPR 22: 1993+A1: 1995+A2: 1996

We hereby certify that one sample of the designation has been tested in our facility on Oct. 31, 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 : Joey Chen , DATE: 11/07/98
(Joey Chen)

CHECKED BY : Yemmy Soong , DATE: 11/07/98
(Yemmy Soong)

APPROVED BY : Mike Su , DATE: 11/07/98
(Mike Su)

ADVANCE DATA TECHNOLOGY CORPORATION

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	COLOR MONITOR
Model No.	:	X21C002, XJ930, DJ930, XJ930U, DJ930U XJ910, DJ910, XJ910U, DJ910U
Power Supply Type	:	Switching
Power Cord	:	Nonshielded (1.8 m)
Data Cable	:	Shielded (1.8 m)

Note: The EUT is a 21" Color Monitor with resolution up to 1600x1200.

The EUT has nine model names which are identical to each other in all aspect except for their model names only, as the following:

* Model : X21C002
* Model : XJ930
* Model : DJ930
* Model: XJ930U
* Model: DJ930U
* Model: XJ910
* Model: DJ910
* Model: XJ910U
* Model: DJ910U

From the above model names, Model : X21C002 was selected as the representative for the test and its data is recorded in this report.

There are two ferrite cores on the video cable outside the Monitor.

For more detailed features description, please refer to Manufacturer's Specification or User's Manual.

2.2 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories are used to form representative test configuration during the tests.

No.	Product	Brand	Model No.	FCC ID	I/O Cable
1	PERSONAL COMPUTER	NTI	PII-233T	DOC	Nonshielded Power (1.8 m)
2	KEYBOARD	FORWARD	FDA-104GA	FDKB8110109	Shielded signal (1.4 m)
3	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.4 m) Nonshielded Power (1.8 m)
4	MODEM	ACEEX	1414	980020504	Shielded signal (1.2 m) Nonshielded Power (1.8 m)
5	MOUSE	DEXIN	A2P800A	80110011	Shielded signal (1.5 m)
6	VGA CARD	CARDEX	CD-GX2A44T	ICUVGA-GW710	N/A

2.3 TEST METHODOLOGY AND CONFIGURATION

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4:1992. Radiated testing was performed at an antenna to EUT distance of 10 m on an open area test site.

Please refer to the photos of test configuration in Item 5.

3. TEST INSTRUMENTS

3.1 TEST INSTRUMENTS (EMISSION)

RADIATED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
HP Spectrum Analyzer	8590L	3544A01042	April 29, 1999
HP Preamplifier	8447D	2944A08313	March 21, 1999
HP Preamplifier	8347A	3307A01088	Sept. 9, 1999
ROHDE & SCHWARZ TEST RECEIVER	ESVS 30	841977/008	Oct. 1, 1999
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 28, 1998
CHASE BiLOG Antenna	CBL6111A	1647	July 3, 1999
EMCO Double Ridged Guide Antenna	3115	9312-4192	April 3, 1999
EMCO Turn Table	1016	1722	N/A
EMCO Tower	1051	1825	N/A
Open Field Test Site	Site 4	ADT-R04	June 19, 1999

Note: 1. The measurement uncertainty is less than +/- 3dB, which is calculated as per NAMA's document NIS81.

2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

CONDUCTED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ Test Receiver	ESHS30	828765/002	July 29, 1999
ROHDE & SCHWARZ Artificial Mains Network	ESH2-Z5	828075/003	July 27, 1999
EMCO-L.I.S.N.	3825/2	90031627	July 27, 1999
Shielded Room	Site 5	ADT-C05	N/A

Note: 1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per NAMA's document NIS81.

2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

3.2 LIMITS OF CONDUCTED AND RADIATED EMISSION

LIMIT OF RADIATED EMISSION OF CISPR 22

FREQUENCY (MHz)	Class A (at 10m) * dBuV/m	Class B (at 10m) * dBuV/m
30 - 230	40	30
230 - 1000	47	37

* Detector Function: Quasi-Peak

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	Peak	Average	Peak	Average
Above 1000	80.0	60.0	74.0	54.0

Note: (1) The lower limit shall apply at the transition frequencies.
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).
(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

LIMIT OF CONDUCTED EMISSION OF CISPR 22

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Note: (1) The lower limit shall apply at the transition frequencies.
(2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz
(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4. TEST RESULTS (EMISSION)

4.1 RADIO DISTURBANCE

Frequency Range	:	0.15 - 30 MHz (Conducted Emission)
		30 - 2000 MHz (Radiated Emission)
Input Voltage	:	120 Vac, 60 Hz
Temperature	:	24 ℃
Humidity	:	85 %
Atmospheric Pressure	:	1004 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -10.8 dB at 0.150 MHz
	Minimum passing margin of radiated emission: -4.0 dB at 160.23 MHz

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

* 1600x1200 mode (106 kHz),
* 1280x1024 mode (91 kHz)
* 640x480 mode (31.5 kHz)

The worst emission levels were found under 1600x1200 (106 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 Color Monitor (EUT) and Color 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.

4.3 TEST DATA OF CONDUCTED EMISSION

EUT: **COLOR MONITOR** MODEL: **X21C002**

MODE: **1600x1200 (106kHz)**

6 dB Bandwidth: 10 kHz

Freq.	L Level		N Level		Limit		Margin [dB (μV)]			
[MHz]	[dB (μV)]		[dB (μV)]		[dB (μV)]		L		N	
	QP	AV	QP	AV	QP	AV	QP	AV	QP	AV
0.150	54.80	-	55.20	-	66.00	56.00	-11.2	-	-10.8	-
0.234	39.00	-	43.20	-	62.31	52.31	-23.3	-	-19.1	-
0.876	9.90	-	11.50	-	56.00	46.00	-46.1	-	-44.5	-
1.697	8.00	-	10.10	-	56.00	46.00	-48.0	-	-45.9	-
11.619	21.90	-	22.70	-	60.00	50.00	-38.1	-	-37.3	-
17.571	35.40	-	35.90	-	60.00	50.00	-24.6	-	-24.1	-

Remarks:
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
4. The emission level of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value

ADT CO. Shielded Room 5

31. Oct 98 14:29

CISPR 22 CLASS B

EUT: X21C002
Op Cond: 1600X1200 85HZ/106KHZ
Test Spec: LISN : L
Comment: 110V AC / 60Hz

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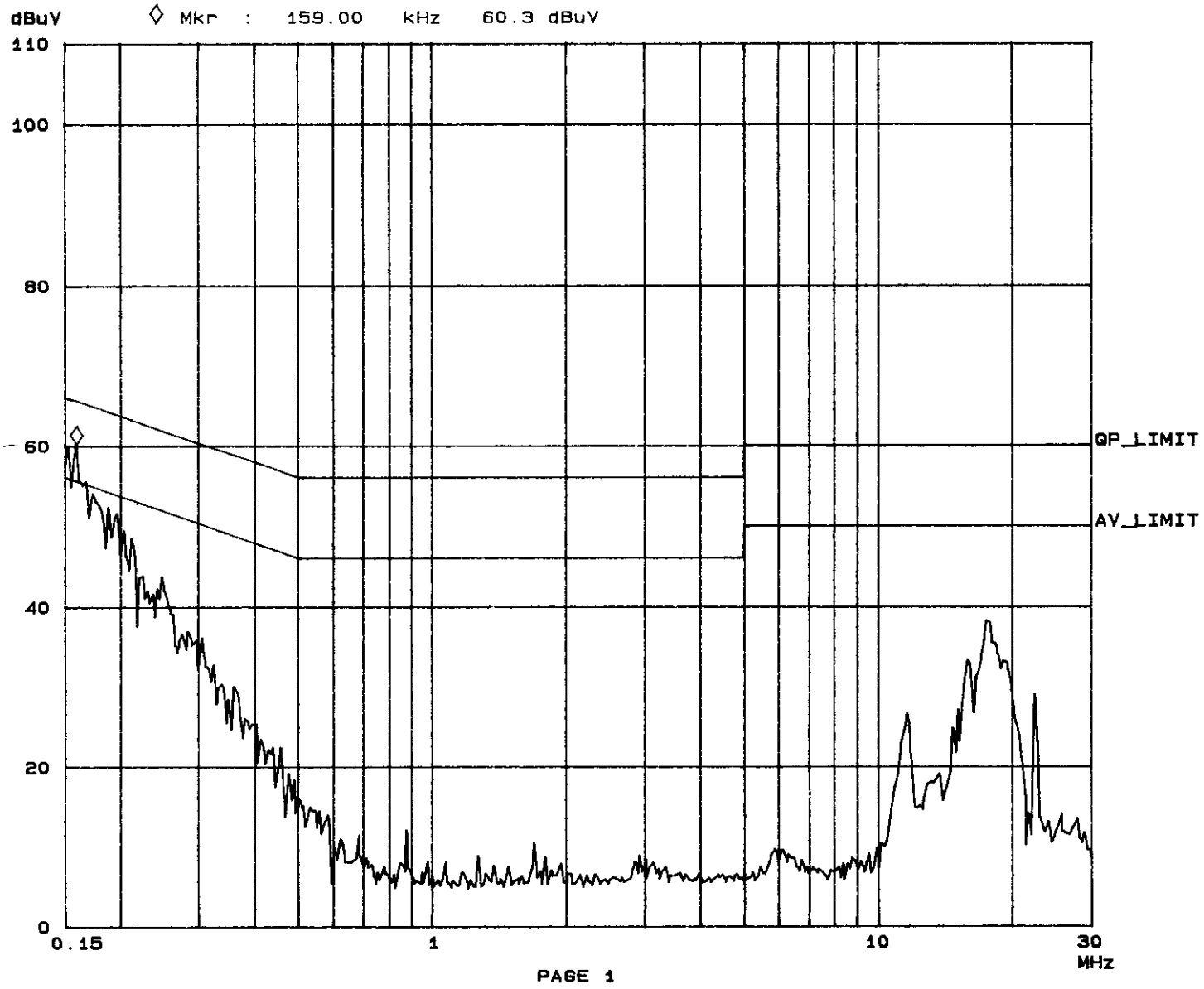
Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	450k	3k	10k	PK	1ms	10dBLN	OFF	60dB
450k	5M	3k	10k	PK	1ms	10dBLN	OFF	60dB
5M	30M	3k	10k	PK	1ms	10dBLN	OFF	60dB



ADT CO. Shielded Room 5
CISPR 22 CLASS B

31. Oct 98 14:50

EUT: X21C002
Op Cond: 1600X1200 85HZ/106KHZ
Test Spec: LISN : N
Comment: 110V AC / 60Hz

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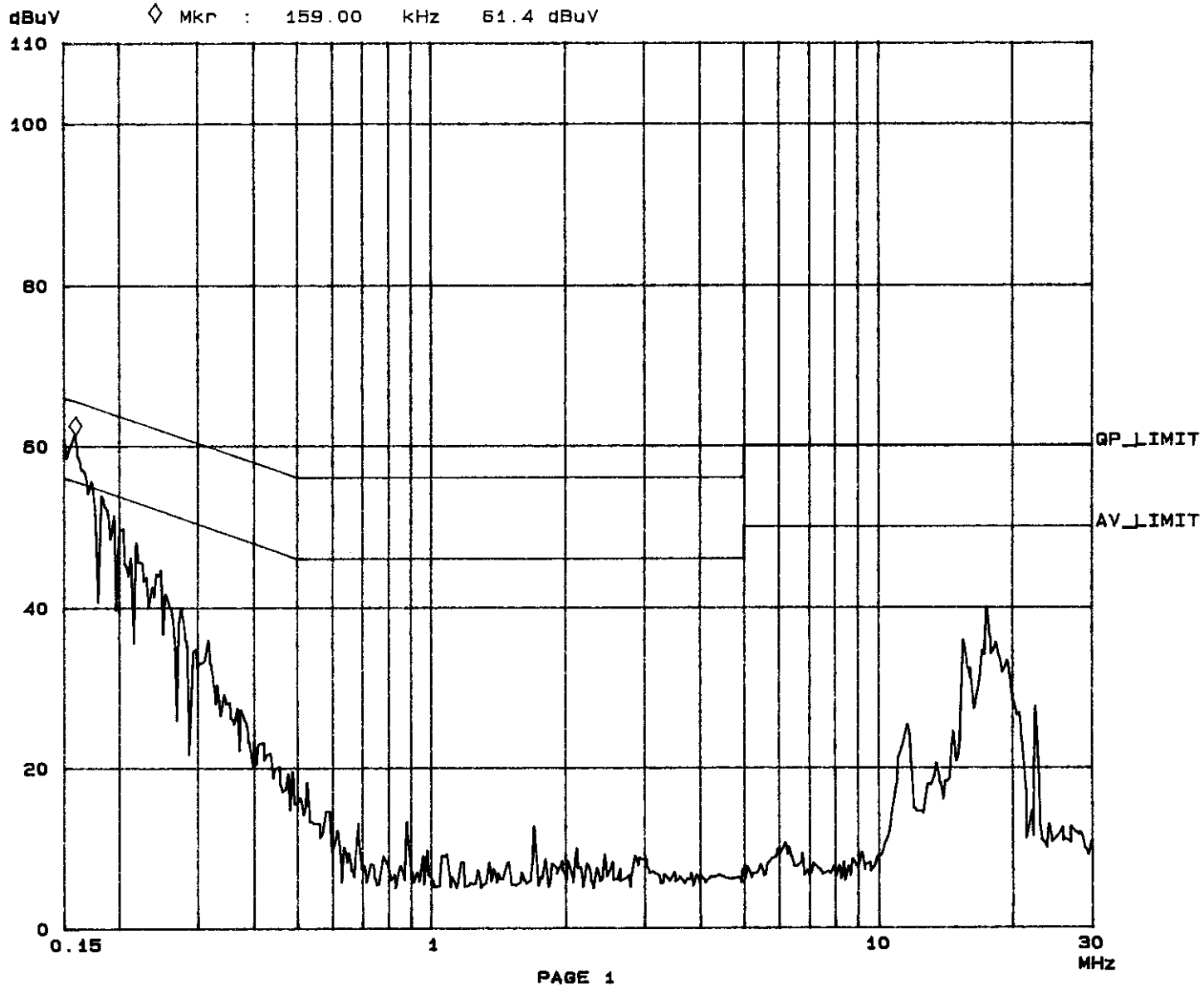
Tested by Joey Chen

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpAge
150k	450k	3k	10k	PK	1ms	10dBLN	OFF	60dB
450k	5M	3k	10k	PK	1ms	10dBLN	OFF	60dB
5M	30M	3k	10k	PK	1ms	10dBLN	OFF	60dB



4.4 TEST DATA OF RADIATED EMISSION

EUT: **COLOR MONITOR** MODEL: **X21C002**

MODE: **1600x1200 (106 kHz)**

ANT. POLARITY: Horizontal

DETECTOR FUNCTION AND BANDWIDTH: Quasi peak, 120 kHz (30-1000 MHz)
Peak, 1 MHz (1000 MHz-2000 MHz)

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

FREQUENCY RANGE: 1000-2000 MHz MEASURED DISTANCE: 3 M

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
68.71	8.2	6.3	14.5	30.0	-15.5
155.74	12.5	2.1	14.6	30.0	-15.4
160.21	12.0	2.8	14.8	30.0	-15.2
182.96	11.6	7.8	19.4	30.0	-10.6
203.16	11.8	7.6	19.4	30.0	-10.6
228.78	13.5	1.6	15.1	30.0	-14.9

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

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TEST DATA OF RADIATED EMISSION

EUT: **COLOR MONITOR** MODEL: **X21C002**

MODE: **1600x1200 (106 kHz)**

ANT. POLARITY: **Vertical**

DETECTOR FUNCTION AND BANDWIDTH: Quasi peak, 120 kHz (30-1000 MHz)
Peak, 1 MHz (1000 MHz-2000 MHz)

FREQUENCY RANGE: 30-1000 MHz MEASURED DISTANCE: 10 M

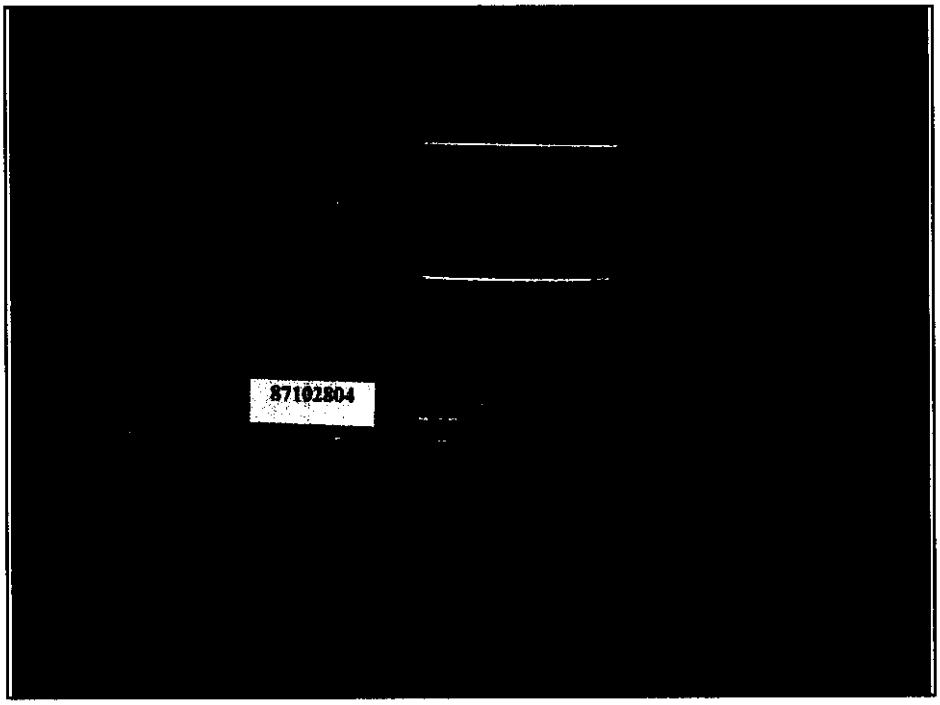
FREQUENCY RANGE: 1000-2000 MHz MEASURED DISTANCE: 3 M

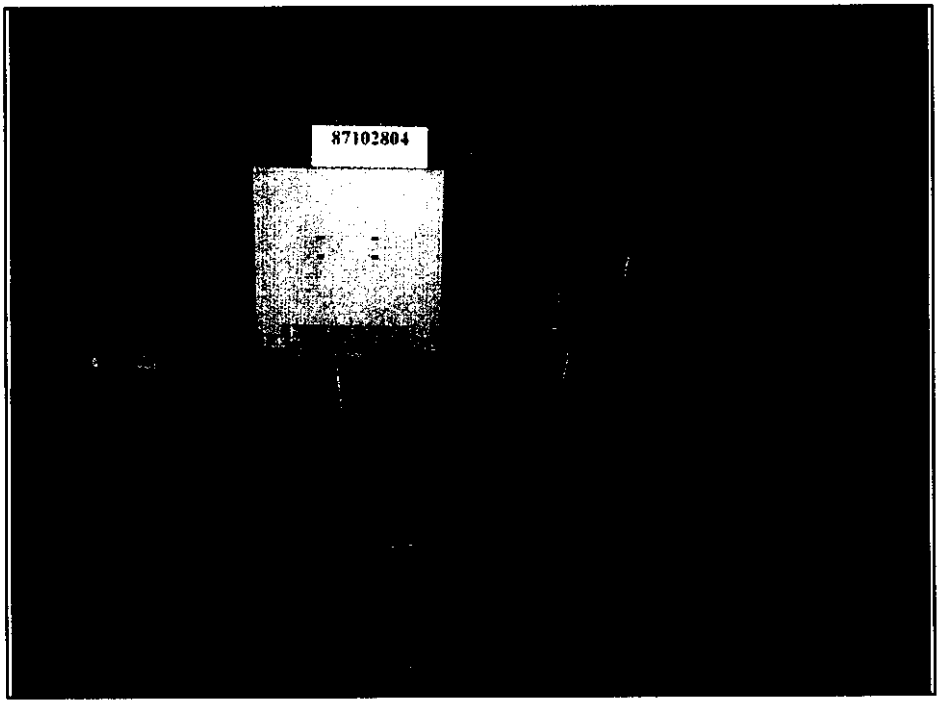
Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
33.65	18.0	3.3	21.3	30.0	-8.7
61.83	7.7	13.7	21.4	30.0	-8.6
68.77	8.0	16.5	24.5	30.0	-5.5
155.74	13.4	5.3	18.7	30.0	-11.3
160.23	12.8	13.2	26.0	30.0	-4.0
183.01	11.6	12.1	23.7	30.0	-6.3
203.10	12.2	7.5	19.7	30.0	-10.3

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

5. PHOTOGRAPHS OF THE TEST CONFIGURATION WITH MINIMUM MARGIN

RADIATED EMISSION TEST





CONDUCTED EMISSION TEST