FCC ID: E7AUCDJU

EMC

TEST REPORT

REPORT NO. : F87062911
MODEL NO. : UCDJU, C836N,
LA BRONCO 36X, CD-736
DATE OF TEST : July 1, 1998

PREPARED FOR: UNITRON INCORPORATED

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PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION

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1. CERTIFICATION

Issue Date: July 6, 1998

Product	:	CD-ROM DRIVE
Trade Name	:	UNITRON, DCS, LA BRONCO, US SERTEK
Model No.	:	UCDJU, C836N, LA BRONCO 36X, CD-736
Applicant	:	UNITRON INCORPORATED
Standard	:	FCC Part 15, Subpart B, Class B ANSI C63.4-1992 CISPR 22:1993 +A1+A2

We hereby certify that one sample of the designation has been tested in our facility on July 1, 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

PREPARED BY: Sharon Hsiung , DATE: 7/6/98
(Sharon Hsiung)

TESTED BY: Bruce Lu , DATE: 7/6/98.
(Bruce Lu)

APPROVED BY: Mike Su , DATE: 7/6/98
(Mike Su)

ADVANCE DATA TECHNOLOGY CORPORATION

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	CD-ROM DRIVE
Model No.	:	UCDJU, C836N, LA BRONCO 36X, CD-736
Power Supply	:	DC 5V/12V
Data Cable	:	Nonshielded (IDE cable)

Note: The EUT is a 36X CD-ROM drive which is designed to use within an IBM PC or compatible computer by using the IDE connection.

It has four model names which are identical to each other in all aspects except for their brand names:

- Model: UCDJU, brand: UNITRON
- Model: C836N, brand: DCS
- Model: LA BRONCO 36X, brand: LA BRONCO
- Model: CD-736, brand: US SERTEK

From the above models, model: UCDJU was chosen as representative model for the test.

User could install one sound card in PC to process audio signals from EUT then output audio to speaker via SPK port located on sound card or only connect headphone to headphone jack on front panel of EUT to listen to an audio directly playing from the CD-ROM Drive.

The EUT was tested under the following two conditions:

(1) The EUT played music CD and PC ran a test program to show H pattern and send messages to each output port. Audio signals were present via headphone port, no sound blaster card was installed.
(2) The EUT played video demo CD and PC showed continuous pictures on monitor and present stereo audio via sound blaster card.

The maximum emission levels of the above two conditions are recorded together in this report.

For more detailed features, 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-233	FCC Doc Approved	Nonshielded Power (1.8m)
2	MONITOR	HP	D2846	FCC DoC Approved	Shielded Signal (1.4m) Nonshielded Power (1.8m)
3	KEYBOARD	FORWARD	FDA-104GA	F4ZDA-104G	Shielded Signal (1.4m)
4	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2m)
5	MODEM	ACEEX	1414	FDAXDM1414	Shielded Signal (1.2m)
6	MOUSE	DEXIN	A2P800A	NIYA2P800A	Shielded Signal (1.5m)
7	EARPHONE	GAMMA	LH-115	N/A	Nonshielded Signal (1.2m)
8	SPEAKER	JAZZ HIPSTER	J-008	N/A	Nonshielded Signal (1.2m)
9	SOUND CARD	YA SHIN	AUDIO1869	FCC Doc Approved	N/A
10	VGA CARD	GORDIA	DSV3365	LUT-DSV3365	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	8594E	3520A01861	Feb. 12, 1999
HP Preamplifier	8447D	2944A08118	June 30, 1999
ROHDE & SCHWARZ TEST RECEIVER	ESVS 10	840241/010	Sept. 9, 1998
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 28, 1998
CHASE BiLOG Antenna	CBL6111A	1079	July 19, 1998
ADT Turn Table	U200	9701	N/A
EMCO Tower	1051	1825	N/A
Open Field Test Site	Site 3	ADT-R03	July 18, 1998

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	828109/007	Aug. 4, 1998
ROHDE & SCHWARZ Artificial Mains Network	ESH2-Z5	892107/003	July 22, 1998
EMCO L.I.S.N.	3825/2	9504-2359	Aug. 1, 1998
Shielded Room	Site 3	ADT-C03	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

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

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	uV/m	dBuV/m	uV/m	dBuV/m
Above 1000	300	49.5	500	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 - 1000 MHz (Radiated Emission)
Input Voltage	:	120 Vac, 60 Hz
Temperature	:	33 ℃
Humidity	:	53 %
Atmospheric Pressure	:	998 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -13.6 dB at 0.218 MHz
	Minimum passing margin of radiated emission: -4.7 dB at 214.30 MHz

4.1.1 EUT OPERATION CONDITION

1. Turn on the power of all equipments.
2. PC plays a demo disk via the EUT and sent out audio via sound card installed. The monitor screen shows video of this demo disk.

OR

1. Turn on the power of all equipments.
2. PC reads a test program and runs it to enable all functions.
3. PC sends "H" messages to monitor and monitor display "H" patterns on screen.
4. PC sends "H" messages to modem.
5. PC sends "H" messages to printer, and the printer prints them on paper.
6. PC plays a music disk via the EUT and send out audio signals to earphone jack on front panel of the EUT.
7. Repeat steps 2-7.

4.1.2 TEST DATA OF CONDUCTED EMISSION

EUT: **CD-ROM DRIVE** MODEL: **UCDJU**

6 dB Bandwidth: 10 kHz

TEST PERSONNEL: Bruce Lu

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
0.156	50.30	-	41.10	-	65.67	55.67	-15.4	-	-24.6	-
0.218	49.30	-	40.60	-	62.89	52.89	-13.6	-	-22.3	-
0.841	42.00	-	33.90	-	56.00	46.00	-14.0	-	-22.1	-
1.870	41.90	-	28.30	-	56.00	46.00	-14.1	-	-27.7	-
16.247	30.50	-	29.00	-	60.00	50.00	-29.5	-	-31.0	-
22.570	37.50	-	37.90	-	60.00	50.00	-22.5	-	-22.1	-

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.

ADT CO. Shielded Room 3
CISPR 22 CLASS B

01. Jul 98 15:19

EUT: UCDJU
Operator: Bruce Lu
Test Spec: LISN : L
Comment: 120V AC / 60Hz
FULL SYSTEM

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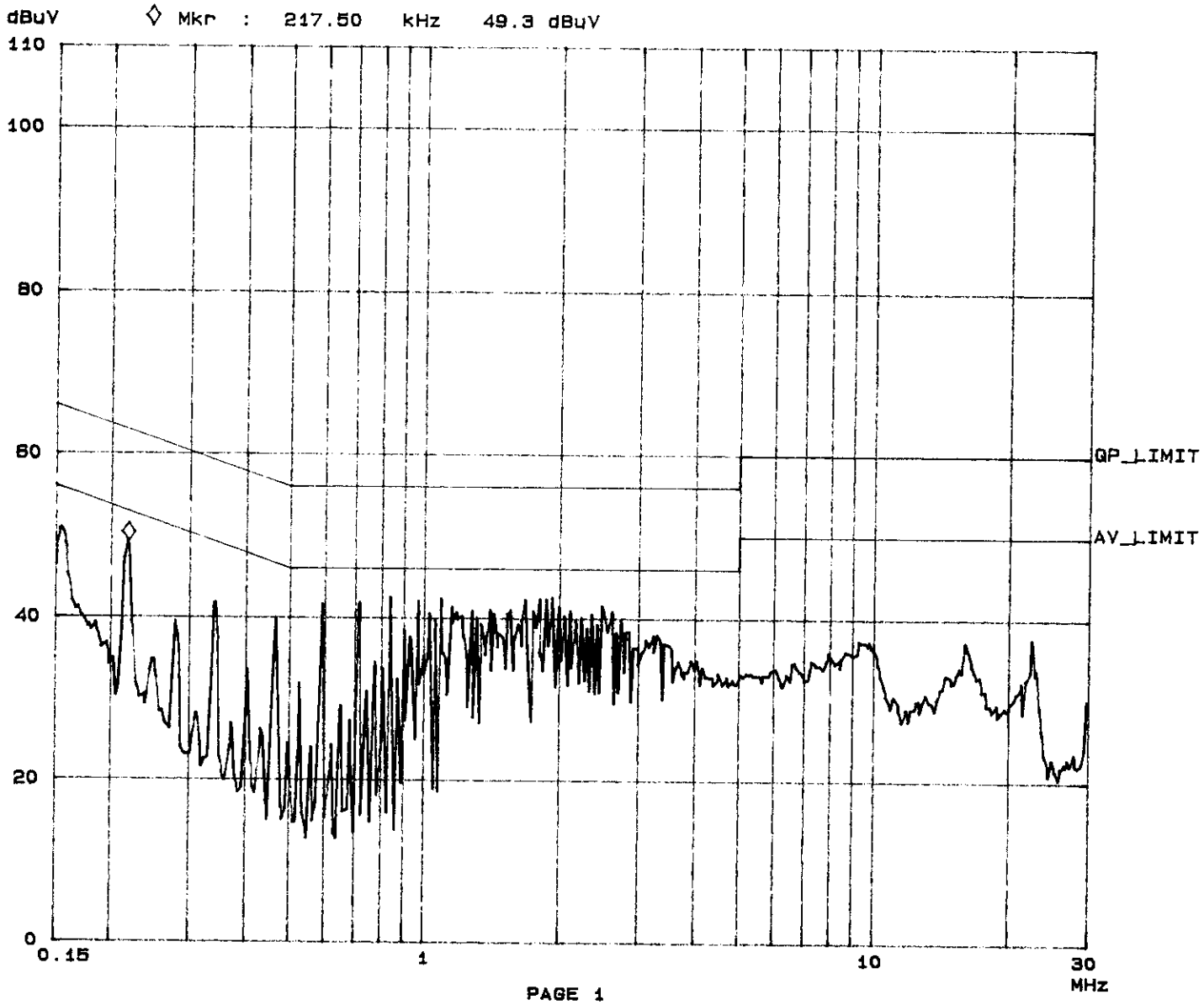
Tested by Bruce Lu

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	450k	100Hz	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 3

01. Jul 98 15:31

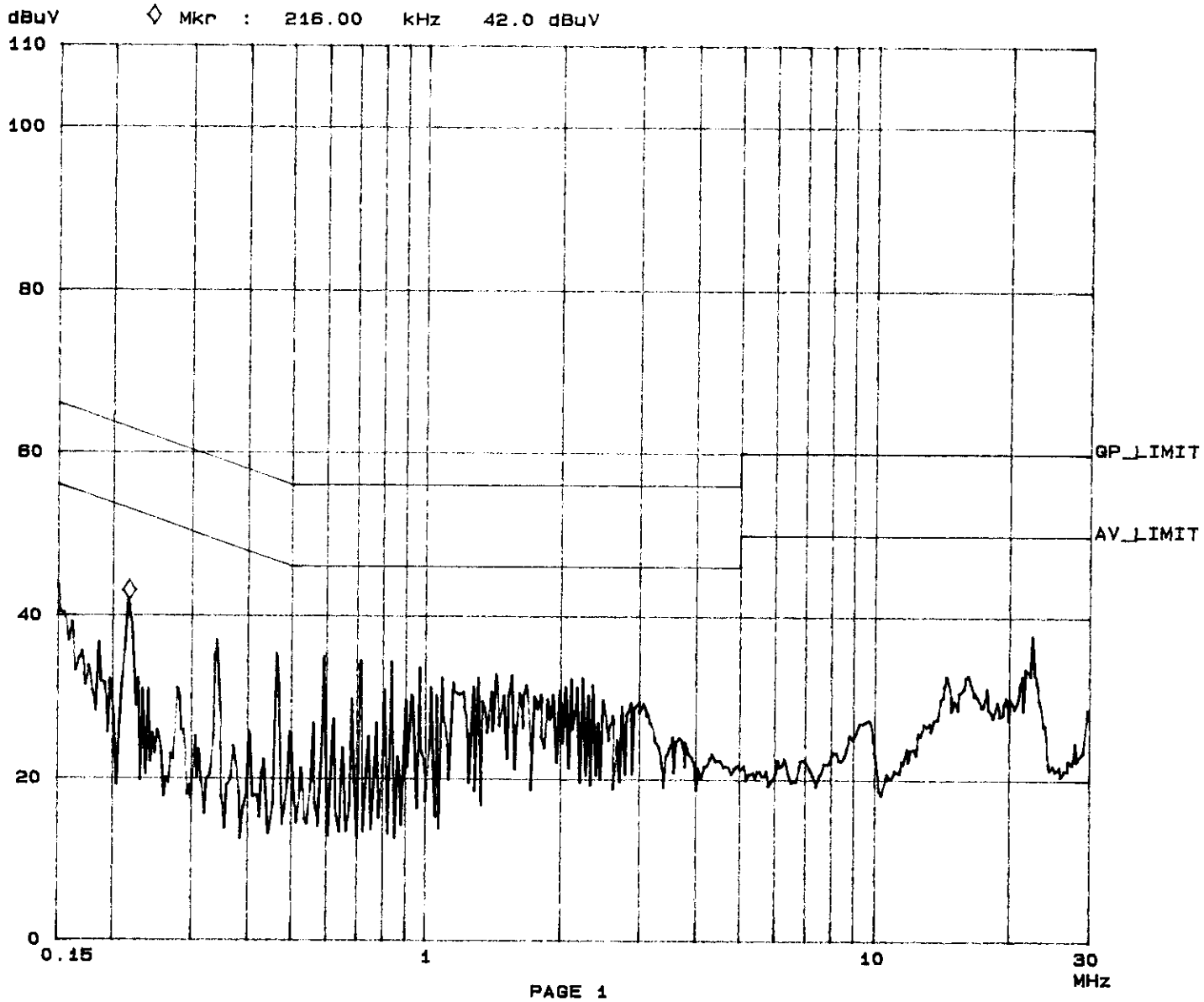
CISPR 22 CLASS B

EUT: UCDJU
Operator: Bruce Lu
Test Spec: LISN : N
Comment: 120V AC / 60Hz
FULL SYSTEM

Report No. F870629 11
Page 9-2
Tested by Bruce Lu

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



4.1.3 TEST DATA OF RADIATED EMISSION

EUT: **CD-ROM DRIVE** MODEL: **UCDJU**

ANTENNA: CHASE BILOG CBL6111A POLARITY: Horizontal

DETECTOR FUNCTION: Quasi-peak 6 dB BANDWIDTH: 120 kHz

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

TEST PERSONNEL: Bruce Lu

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
113.00	13.1	11.2	24.3	30.0	-5.7
214.30	13.8	11.5	25.3	30.0	-4.7
221.00	14.1	9.8	23.9	30.0	-6.1
236.71	14.7	7.6	22.3	37.0	-14.7
401.50	20.8	4.0	24.8	37.0	-12.2
419.00	20.8	7.6	28.4	37.0	-8.6

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.

FCC ID: E7AUCDJU

TEST DATA OF RADIATED EMISSION

EUT: **CD-ROM DRIVE** MODEL: **UCDJU**

ANTENNA: CHASE BILOG CBL6111A POLARITY: Vertical

DETECTOR FUNCTION: Quasi-peak 6 dB BANDWIDTH: 120 kHz

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

TEST PERSONNEL: Bruce Lu

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)
112.40	13.5	9.9	23.4	30.0	-6.6
211.60	13.4	5.2	18.6	30.0	-11.4
221.00	13.5	3.7	17.2	30.0	-12.8
236.71	13.6	4.8	18.4	37.0	-18.6
403.30	19.8	4.9	24.7	37.0	-12.3
419.00	19.8	8.8	28.6	37.0	-8.4

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.