



ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

Test report file number : E029R-025

Applicant : DIASONIC TECHNOLOGY CO., LTD.
Address : 321-43, Suksu-Dong, Manan-Ku, Anyang-City, Kyungki-Do, Korea

Manufacturer : DIASONIC TECHNOLOGY CO., LTD.
Address : 321-43, Suksu-Dong, Manan-Ku, Anyang-City, Kyungki-Do, Korea

Type of Equipment : DIGITAL VOICE RECORDER (Class B Computing Device Peripheral)

FCC ID : P7KDDR3KR

Model Name : DDR-3000R

Multiple Model Name : DDR-3000, DDR-3100R, DDR-3100

Serial number : N/A

Total page of Report : 15 pages (including this page)

Date of Incoming : June 11, 2002

Date of Issuing : September 12, 2002

SUMMARY

The equipment complies with the requirements of **FCC CFR 47 PART 15 SUBPART B, Class B.**

This test report contains only the results of a single test of the sample supplied for the examination. It is not a general valid assessment of the features of the respective products of the mass-production.

Prepared by: G. W. Lee
G. W. Lee/ Assistant Chief Engineer

Reviewed by: Y. K. Kwon
Y. K. Kwon/ Chief Engineer

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FCC-003 (Rev.0)

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ONETECH

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1. VERIFICATION OF COMPLIANCE

-. APPLICANT : DIASONIC TECHNOLOGY CO., LTD.
 -. ADDRESS : 321-43, Suksu-Dong, Manan-Ku, Anyang-City, Kyungki-Do, Korea
 -. CONTACT PERSON : Mr. Hwan-Min, Kim / Manager
 -. TELEPHONE NO : +82-31-474-0852
 -. FCC ID : P7KDDR3KR
 -. MODEL NO/NAME : DDR-3000R
 -. SERIAL NUMBER : N/A
 -. DATE : September 12, 2002

DEVICE TYPE	Peripheral Device for Class B Computing Device - Unintentional Radiator
E.U.T. DESCRIPTION	DIGITAL VOICE RECORDER
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4/1992
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	CERTIFICATION
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15, SECTION 15.101
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
FINAL TEST WAS CONDUCTED ON	3 METER OPEN AREA TEST SITE

The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

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2. GENERAL INFORMATION

2.1 Product Description

The DIASONIC TECHNOLOGY CO., LTD., Model DDR-3000R (referred to as the EUT in this report) is a DIGITAL VOICE RECORDER that is a personal computer peripheral with USB standard port and has functions of MP3 player and FM broadcast receiver. Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Plastic
LIST OF EACH OSC. OR CRY. FREQ.(FREQ.>=1MHz)	30 MHz
MULTI-FUNCTION	MP3 Player, Voice Recorder, FM Broadcast Receiver
FM TUNER MODULE MFR./MODEL NAME	A&T Solution Co./ATM-310
NUMBER OF LAYERS	4 Layers
EXTERNAL CONNECTOR	Audio Line In (Ext. MIC), Earphone, USB, DC IN

Model Differences:

-. The following lists consist of the added model and their differences. The added models are identical to the basic model except for below model difference only.

	Model Name	Model Difference
Basic Model	DDR-3000R	
Added Model	DDR-3100R DDR-3000 DDR-3100	Only type designation because enclosure changes. Only type designation because that the function for FM receiver delete from basic model. Only type designation because enclosure changes from DDR-3000.

2.2 Related Submittal(s) / Grant(s)

Original submittal only

2.3 Test System Details

Defined as equipment needed for correct operation of the EUT, but not considered as tested:

Model	Manufacturer	FCC ID	Description	Connected to
DDR-3000R	DIASONIC TECHNOLOGY CO., LTD.	P7KDDR3KR	EUT	NOTEBOOK PC
AEC-3530	ANOMA ELECTRONIC CO., LTD	N/A	AC/DC ADAPTOR	EUT
-	-	N/A	EXTERNAL MIC.	EUT
-	-	N/A	EARPHONE	EUT
S690	Samsung Elect.	DOC	NOTEBOOK PC	-

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AD-6019(V)	Samsung Elect.	N/A	AC/DC ADAPTER	NOTEBOOK PC
M-SAS51	Logitech	JNZ211167	MOUSE	NOTEBOOK PC
2225C	HP	DSI6XU2225	PRINTER	NOTEBOOK PC

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2.4 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4/1992. Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

2.5 Test Facility

The open area test site and conducted measurement facilities are located on at 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-Kun, Kyunggi-Do 464-080 Korea. Description details of test facilities were submitted to the Commission on January 18, 2002. (Registration Number: 92819)

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3. SYSTEM TEST CONFIGURATION

3.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
DIGITAL BOARD	DIASONIC TECHNOLOGY	DDR-3000	N/A
AUDIO BOARD	DIASONIC TECHNOLOGY	DDR-3000	N/A

3.2 EUT exercise Software

- . Play mode and Recording mode
- . After connecting the EUT to USB port of a notebook PC, data were continuously uploading and downloading from HDD of the notebook PC to the EUT.
- . FM receiving mode
- The EUT was tested on up/downloading mode as the worst case.

3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
DIGITAL VOICE RECORDER (EUT)	N	Y	1.2 (P), 1.2 (D)
AC/DC ADAPTER (EUT)	N/A	N	1.2 (D)
EXTERNAL MIC.	N/A	N	1.2 (D)
EARPHONE	N/A	N	1.2 (D)
NOTEBOOK PC	N	-	1.5 (P)
AC/DC ADAPTER (Notebook PC)	N	N	1.2(P), 1.0(D)
MOUSE	N/A	N	1.2(D)
PRINTER	N	Y	1.5(P), 1.5(D)

* The marked "(P)" means the Power Cable and "D" means the I/O Cable.



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3.4 Noise Suppression Parts on Cable

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
DIGITAL VOICE RECORDER (EUT)	Y	EUT END	Y	BOTH END
AC/DC ADAPTER (EUT)	N	N/A	Y	EUT END
EXTERNAL MIC.	N	N/A	Y	EUT END
EARPHONE	N	N/A	Y	EUT END
NOTEBOOK PC	-	-	-	-
AC/DC ADAPTER (Notebook PC)	Y	Notebook PC END	Y	Notebook PC END
MOUSE	N	N/A	Y	Notebook PC END
PRINTER	N	N/A	Y	BOTH END

3.5 Equipment Modifications

To achieve compliance to CLASS B levels, the following change(s) was made by ONETECH Corp. during compliance testing:

“There were no Modified items during EMI test”

3.6 Configuration of Test System

Line Conducted Test : The EUT was connected to PC and the power line of PC was connected to LISN. All supporting equipments were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.4/1992 7.2.3 to determine the worse operating conditions.

Remark: Conducted emission test was performed at each mode for AC/DC adaptor of the EUT and notebook PC.

Radiated Emission Test : Preliminary radiated emission test was conducted using the procedure in ANSI C63.4/1992 8.3.1.1 to determine the worse operating conditions. Final radiated emission test was conducted at 3 meters open area test site.

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4. PRELIMINARY TEST

4.1 AC Power line Conducted Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Play mode	
Recoding mode	
FM Receiving mode	
Files Up/Downloading mode	X

4.2 Radiated Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Play mode	
Recoding mode	
FM Receiving mode	
Files Up/Downloading mode	X



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5. FINAL RESULT OF MEASUREMENT

Preliminary test was done in normal operation mode. And the final measurement was selected for the maximized emission level

5.1 Conducted Emission Test

Humidity Level : 50 % Temperature : 21 °C

Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.107

Type of Test : CLASS B

Result : PASSED BY -5.52 dB at 0.98 MHz (at the adaptor of notebook PC)

EUT : DIGITAL VOICE RECORDER Date: July 26, 2002

Operating Condition : Files Up/Downloading mode

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)

Remark : The adaptor of the EUT

Power Line Conducted Emission			FCC CLASS B	
Frequency (MHz)	Amplitude (dBuV)	Conductor	Limit (dBuV)	Margin (dB)
4.07	13.42	HOT	48.00	-34.58
4.88	13.80	NEUTRAL	48.00	-34.20
11.29	25.07	HOT	48.00	-22.93
22.58	40.50	HOT	48.00	-7.50
27.48	19.67	HOT	48.00	-28.33
28.22	20.77	NEUTRAL	48.00	-27.23

Line Conducted Emission Tabulated Data



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Remark : The adaptor of notebook PC

Power Line Conducted Emission			FCC CLASS B	
Frequency (MHz)	Amplitude (dBuV)	Conductor	Limit (dBuV)	Margin (dB)
0.46	40.56	HOT	48.00	-7.44
0.72	40.88	HOT	48.00	-7.12
0.98	42.48	HOT	48.00	-5.52
5.71	34.33	HOT	48.00	-13.67
7.61	33.86	HOT	48.00	-14.14
8.26	33.92	NEUTRAL	48.00	-14.08

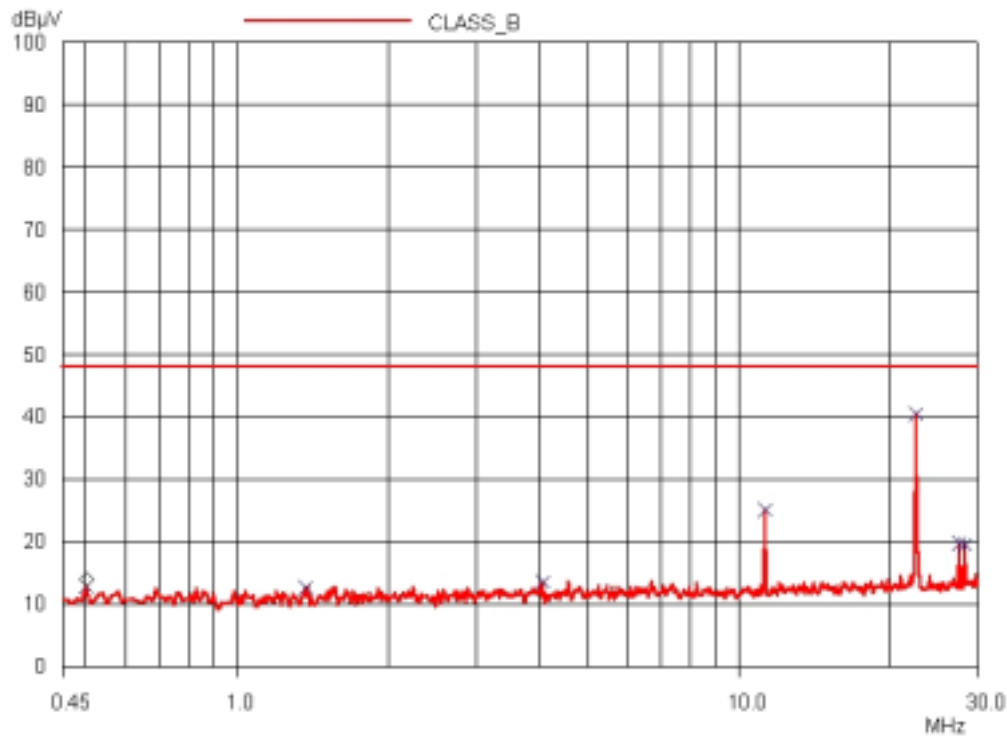
Line Conducted Emission Tabulated Data

Tested by: Sue-Yong, Lee / Test Engineer

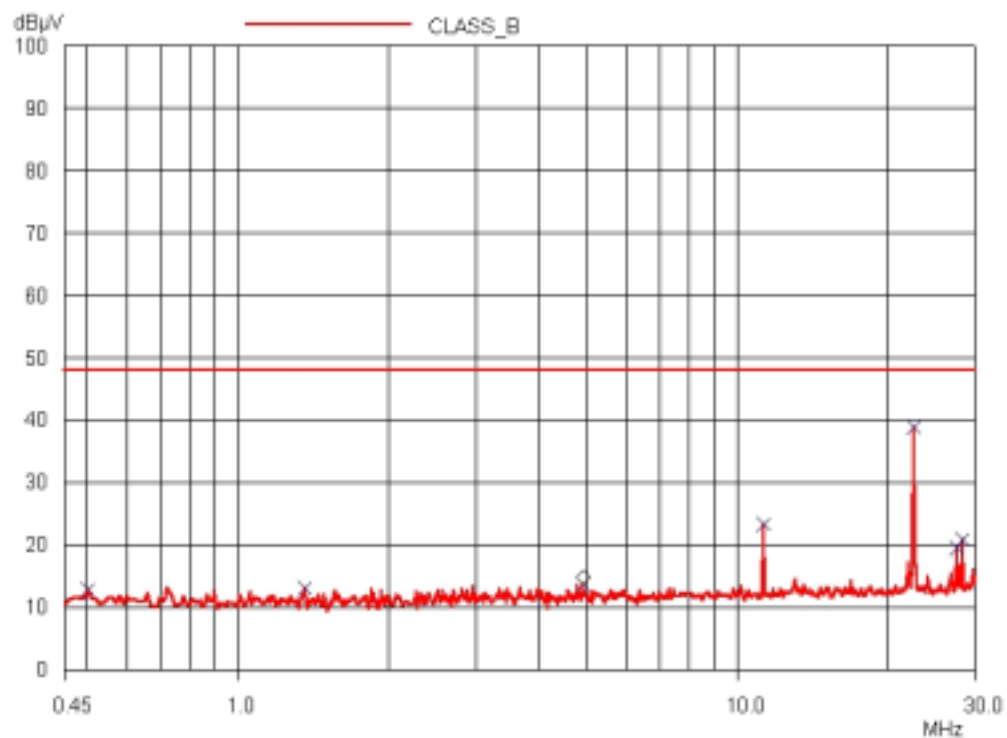


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Remark: The adaptor of the EUT



HOT LINE



NEUTRAL LINE

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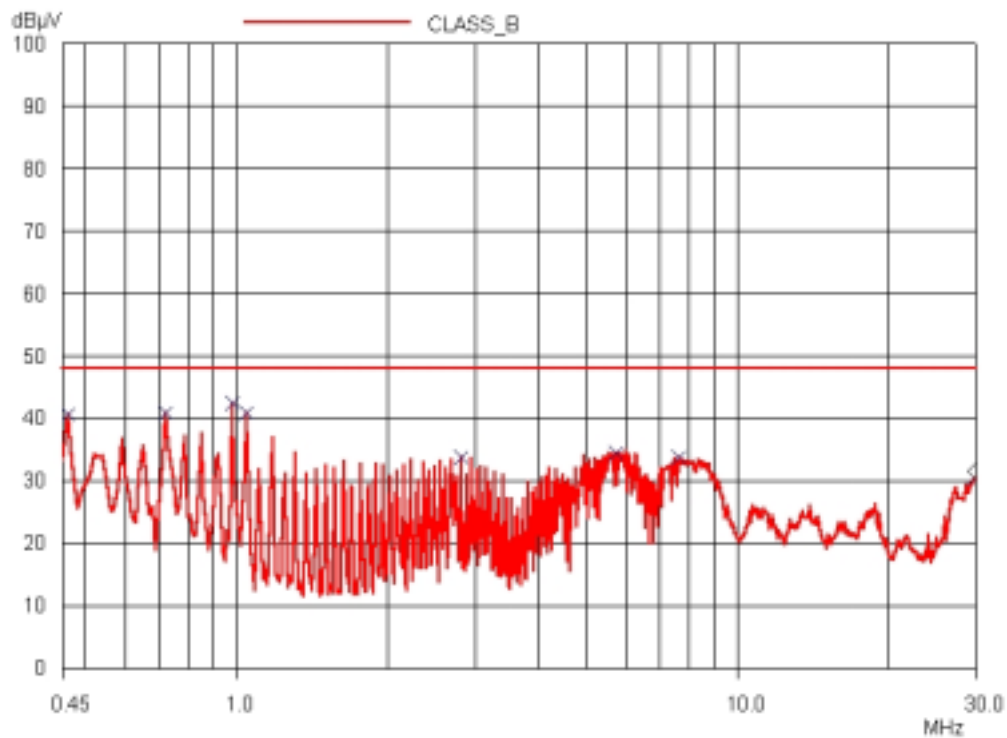
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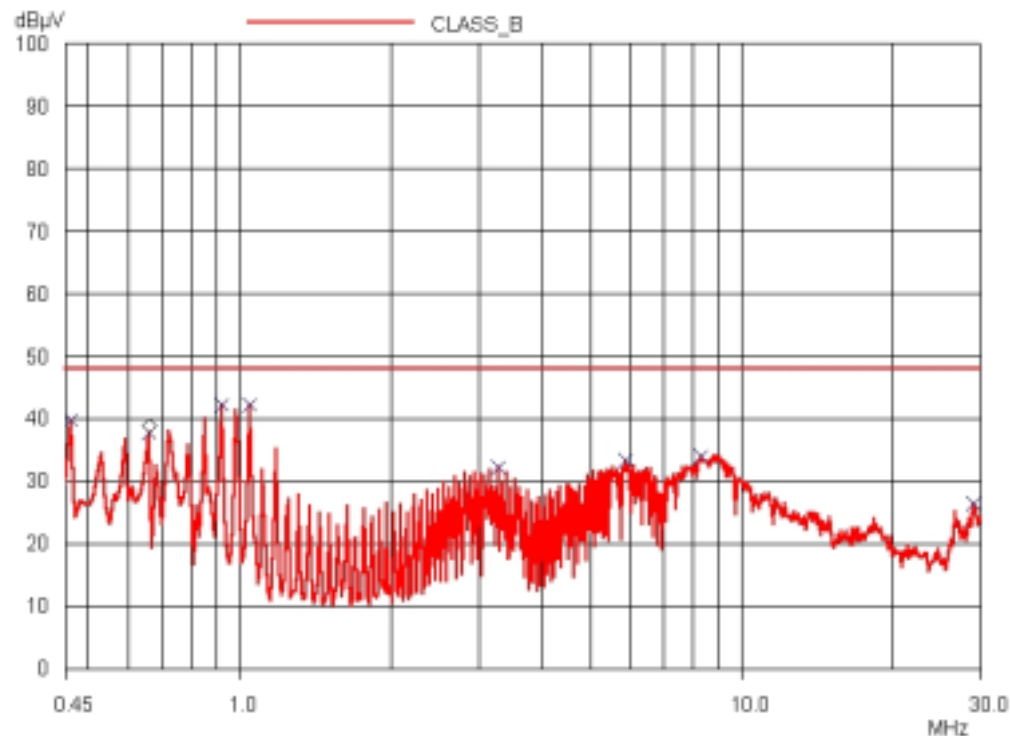


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Remark: The adaptor of notebook PC



HOT LINE



NEUTRAL LINE

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5.2 Radiated Emission Test

The following table shows the highest levels of radiated emission on both polarizations of horizontal and vertical.

Humidity Level : 50 % Temperature : 23 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109
Type of Test : CLASS B
Result : PASSED BY -3.91 dB at 60.00 MHz

EUT : DIGITAL VOICE RECORDER Date: July 27, 2002
Operating Condition : Files Up/Downloading mode
Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
Distance : 3 Meter

Radiated Emissions		Ant	Correction Factors		Total	FCC CLASS B	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
60.00	25.70	V	9.41	0.98	36.09	40.00	-3.91
72.00	26.00	H	7.39	1.00	34.39	40.00	-5.61
84.00	27.60	V	7.31	1.08	35.99	40.00	-4.01
144.00	21.34	V	12.93	1.33	35.60	43.50	-7.90
180.00	14.60	V	16.12	1.45	32.17	43.50	-11.33
191.90	17.90	V	16.58	1.52	36.00	43.50	-7.50
230.60	28.00	H	11.19	1.73	40.92	46.00	-5.08
263.80	20.60	H	12.53	1.86	34.99	46.00	-11.01
297.00	23.00	H	14.84	1.99	39.83	46.00	-6.17
330.20	17.90	H	14.22	2.18	34.30	46.00	-11.70
415.60	17.30	H	15.54	2.46	35.30	46.00	-10.70
432.40	14.00	H	15.90	2.50	32.40	46.00	-13.60

Radiated Emissions Tabulated Data

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Tested by: Sue-Yong, Lee / Test Engineer

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6. FIELD STRENGTH CALCULATION

Meter readings are compared to the specification limit correcting for antenna and cable losses

+ Meter reading (dBuV)

+ Cable Loss (dB)

+ Antenna Factor (Loss) (dB/meter)

= Corrected Reading (dBuV/meter)

- Specification Limit (dBuV/meter)

= dB Relative to Spec (+/- dB)



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7. LIST OF TEST EQUIPMENT

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVS 10	827864/005	OCT/01	12MONTH	■
2.	Test receiver	R/S	ESHS 10	834467/007	APR/02	12MONTH	■
3.	Spectrum analyzer	HP	8568B	3109A05456	APR/02	12MONTH	■
4.	RF preselector	HP	85685A	3107A01264	APR/02	12MONTH	■
5.	Quasi-Peak Adapter	HP	85650A	3107A01542	APR/02	12MONTH	■
6.	Biconical antenna	EMCO	3104C	9109-4441 9109-4443 9109-4444	APR/02	12MONTH	■
7.	Log Periodic antenna	EMCO	3146	9109-3213 9109-3214 9109-3217	APR/02	12MONTH	■
8.	LISN	EMCO	3825/2	9109-1867 9109-1869	AUG/02	12MONTH	■
9.	Computer System	HP	98581C	98543A	N/A	N/A	■
	Hard disk drive		9153C	CMC762Z9153	N/A	N/A	■
10.	Position Controller	EMCO	1090	9107-1038	N/A	N/A	■
11.	Turn Table	EMCO	1080-1.21	9109-1576	N/A	N/A	■
12.	Antenna Master	EMCO	1070-1	9109-1624	N/A	N/A	■