



ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

Test report file number : E049R-012

Applicant : Chois Technology Co., Ltd.
Address : Swen Daelim Bldg., Suite 1301, 592-5, Dohwa-Dong, Nam-Gu, Incheon, Korea

Manufacturer : Chois Technology Co., Ltd.
Address : Swen Daelim Bldg., Suite 1301, 592-5, Dohwa-Dong, Nam-Gu, Incheon, Korea

Type of Equipment : X-Pointer

FCC ID : RVBXP200F

Model Name : XPR212F

Multiple Model Name : XPR264F and XPR200F

Serial number : N/A

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

Date of Incoming : July 5, 2004

Date of Issuing : September 3, 2004

SUMMARY

The equipment complies with the requirements of **FCC CFR 47 PART 15 SUBPART B, SECTION 15.101.**

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/ Chief Engineer
EMC Div.
ONETECH Corp.

Reviewed by: Y. K. Kwon
Y. K. Kwon/ Director
EMC Div.
ONETECH Corp.



CONTENTS

	Page
1. VERIFICATION OF COMPLIANCE	3
2. GENERAL INFORMATION	4
2.1 PRODUCT DESCRIPTION	4
2.2 MODEL DIFFERENCES:	4
2.3 RELATED SUBMITTAL(S) / GRANT(S)	4
2.4 TEST SYSTEM DETAILS	5
2.5 TEST METHODOLOGY	5
2.6 TEST FACILITY	5
3. SYSTEM TEST CONFIGURATION	6
3.1 JUSTIFICATION	6
3.2 EUT EXERCISE SOFTWARE	6
3.3 EQUIPMENT MODIFICATIONS	6
3.4 CONFIGURATION OF TEST SYSTEM	6
4. PRELIMINARY TEST	7
4.1 AC POWER LINE CONDUCTED EMISSIONS TESTS	7
4.2 RADIATED EMISSIONS TESTS	7
5. FINAL RESULT OF MEASUREMENT	8
5.1 CONDUCTED EMISSION TEST	8
5.1 RADIATED EMISSION TEST	12
6. FIELD STRENGTH CALCULATION	14
7. LIST OF TEST EQUIPMENT	15



1. VERIFICATION OF COMPLIANCE

- APPLICANT : Chois Technology Co., Ltd.
- ADDRESS : Swen Daelim Bldg., Suite 1301, 592-5, Dohwa-Dong, Nam-Gu, Incheon, Korea
- CONTACT PERSON : Mr. Jong-Chul, Shin / Team Director
- TELEPHONE NO : +82-32-246-3404
- FCC ID : RVBXHR200F
- MODEL NO/NAME : XPR212F
- SERIAL NUMBER : N/A
- DATE : September 3, 2004

DEVICE TYPE	Receiver and Peripheral Device for Class B Computing device - Unintentional Radiator
E.U.T. DESCRIPTION	Remote Control & Laser Pointer for Presentation
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4: 2001
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.

**2. GENERAL INFORMATION****2.1 Product Description**

The Chois Technology Co., Ltd., Model XPR212F (referred to as the EUT in this report) is a peripheral device that is fixed USB port of PC and receives the signal from the transmitter, Model: XPT200F, FCC ID: RVBXPT200F, which was manufactured by above applicant. The product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE		Non-Metal
RECEIVING FREQUENCY		433.92 MHz
RF RECEIVER MODULE	TYPE	P-XPXR-200 by Chois Technology Co., Ltd.
	LOCAL CLOCK FREQ.	433.92 MHz
	FREQUENCY GENERATION	Crystal Resonator
	MODULATION SCHEME	FM
LIST OF EACH OSC. OR CRY. FREQ. (FREQ.>=1MHz)		47.0244 MHz and 10.24 MHz on Main Board 6 MHz and 12 MHz on Memory Board
OPERATING VOLTAGE/CURRENT		DC5V from the USB hub standard of PC
NUMBER OF LAYERS		2 Layers

2.2 Model Differences:

The difference(s) compared to the EUT is as follows:

		Model Differences
Basic Model	XPR212F	Flash Memory size is 128MB
Multiple Model	XPR264F	Flash Memory size is 68MB
	XPR200F	Flash memory is not included in the EUT.

2.3 Related Submittal(s) / Grant(s)

Original submittal only



2.4 Test System Details

The EUT was tested with the following all equipment used in the tested systems are:

Model	Manufacturer	FCC ID	Description	Connected to
XPR212F	Chois Technology Co., Ltd.	RVBXHR200F	RECEIVER	Notebook PC
PP01L	DELL Computer Corp.	DoC	Notebook PC	-
M-SAS51	Logitech	JNZ211167	Mouse	Notebook PC
2225C	HP	DSI6XU2225	Printer	Notebook PC
020-0470	Cardinal	GDE0196	Modem	Notebook PC

2.5 Test Methodology

Radiated testing was performed according to the procedures in ANSI C63.4: 2001. Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

2.6 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)



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
Main Board	Chois Technology Co., Ltd.	N/A	N/A
Memory Board	Chois Technology Co., Ltd.	N/A	N/A

3.2 EUT exercise Software

After connecting the EUT to USB port of PC, the signal was continuously received and data were continuously read and written from the HDD of the PC to the EUT, but the worst data was recorded in this test report..

3.3 Equipment Modifications

- None

3.4 Configuration of Test System

Line Conducted Test: The EUT was inserted to USB port of 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: 2001 7.2.3 to determine the worse operating conditions.

Radiated Emission Test: Preliminary radiated emissions test were conducted using the procedure in ANSI C63.4: 2001 8.3.1.1 and 13.1.4.1 to determine the worse operating conditions. Final radiated emission tests were conducted at 3meter open area test site.



4. PRELIMINARY TEST

4.1 AC Power line Conducted Emissions Tests

During Preliminary Tests, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Data were continuously read and written via USB	
RX mode	X

4.2 Radiated Emissions Tests

During Preliminary Tests, the following operating modes were investigated

Operation Mode	The Worse operating condition (Please check one only)
Data were continuously read and written via USB	
RX mode	X



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 : 44 %

Temperature: 23 °C

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

Type of Test : Receiver

Result : PASSED BY -12.51 dB at 0.64 MHz under average of data receiving mode.

EUT : X-Pointer

Date: August 28, 2004

Operating Condition : Data receiving mode.

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

Frequency (MHz)	Line	Peak (dBuV)		Margin (dB)
		Emission level	Q.P Limits	
0.16	N	46.91	65.46	-18.55
0.26	H	44.11	61.27	-17.16
0.32	N	39.87	59.71	-19.84
0.64	H	34.97	56.00	-21.03
9.50	N	43.03	60.00	-16.97
10.18	H	42.73	60.00	-17.27
Frequency (MHz)	Line	Average (dBuV)		Margin (dB)
		Emission level	Limits	
0.26	H	37.51	51.27	-13.76
0.32	N	35.11	49.71	-14.60
0.64	H	33.49	46.00	-12.51
9.50	N	34.39	50.00	-15.61

Line Conducted Emission Tabulated Data



Operating Condition : Data reading/writing mode.

Frequency (MHz)	Line	Peak (dBuV)		Margin (dB)
		Emission level	Q.P Limits	
0.15	N	50.07	66.00	-15.93
0.17	H	46.65	64.96	-18.31
0.26	H	42.86	61.43	-18.57
0.32	H	39.40	59.71	-20.31
8.50	H	42.18	60.00	-17.82
9.52	H	42.11	60.00	-17.89
Frequency (MHz)	Line	Average (dBuV)		Margin (dB)
		Emission level	Limits	
0.15	N	30.61	56.00	-25.39
0.26	H	37.24	51.43	-14.19
0.32	H	34.99	49.71	-14.72
8.50	H	32.93	50.00	-17.07

Line Conducted Emission Tabulated Data

Remark : "H": Hot Line, "N": Neutral line

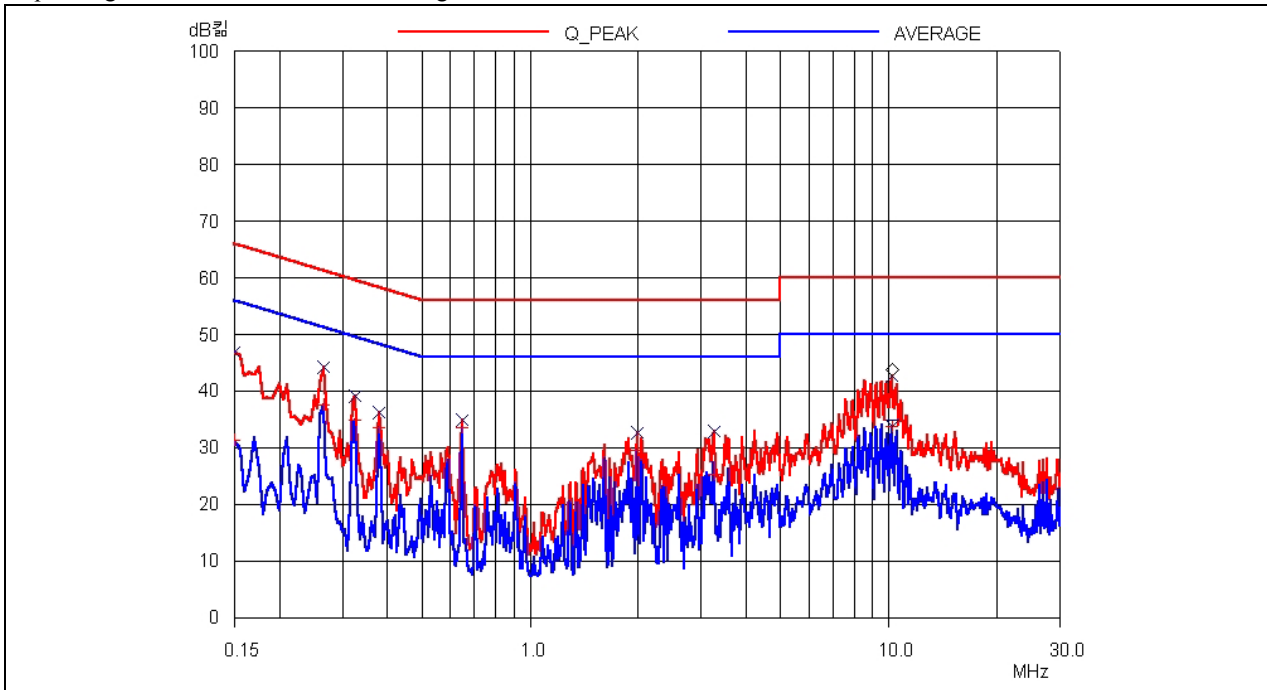
See next page for an overview sweep performed with peak and average detector.

기홍

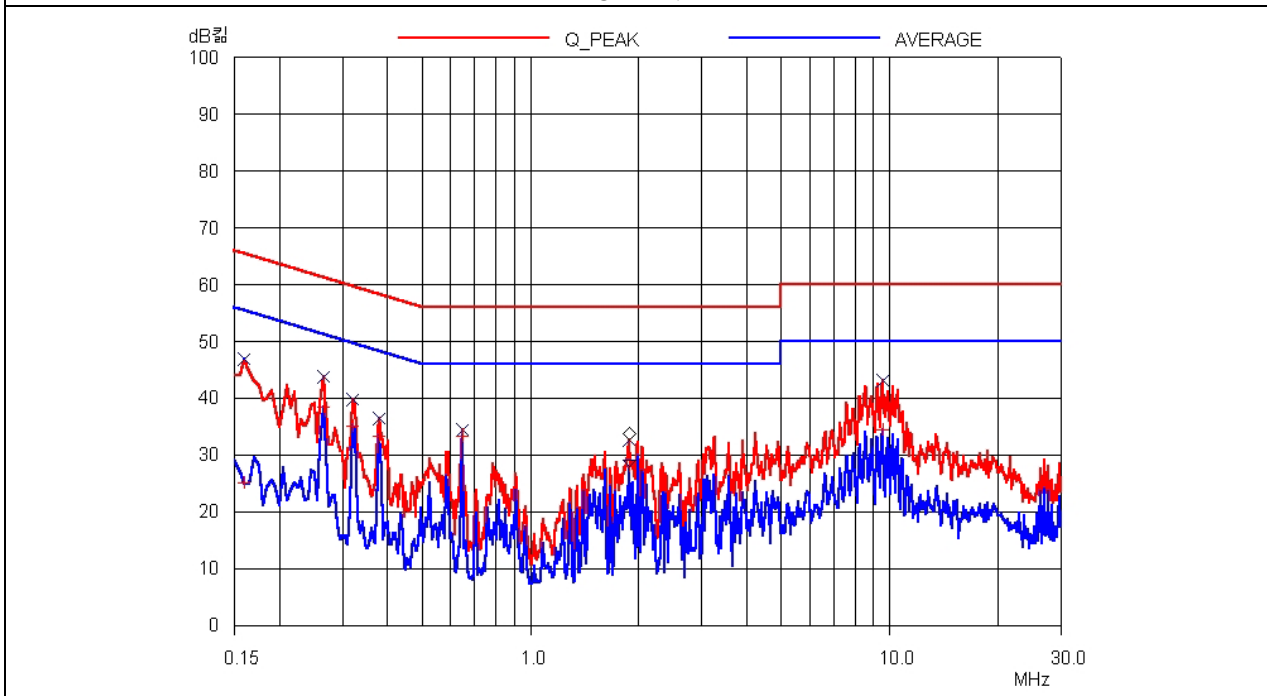
Tested by: G. H. Nam / Test Engineer



Operating Condition : Data receiving mode.



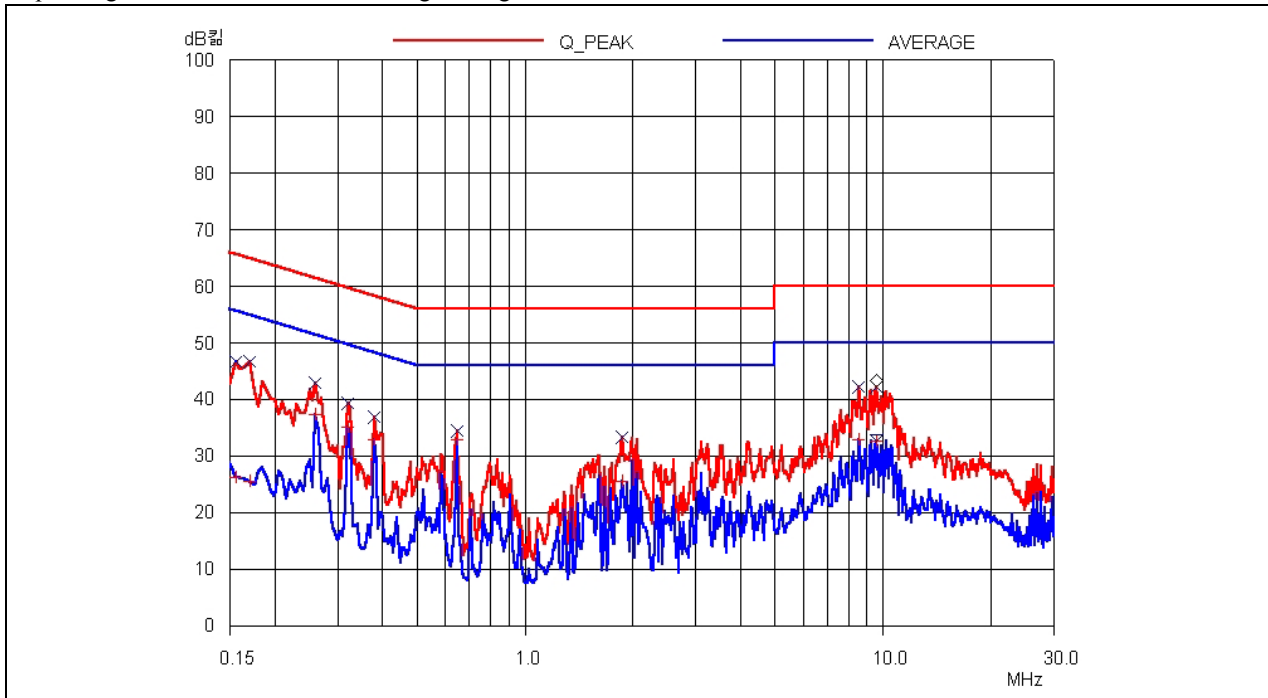
HOT LINE



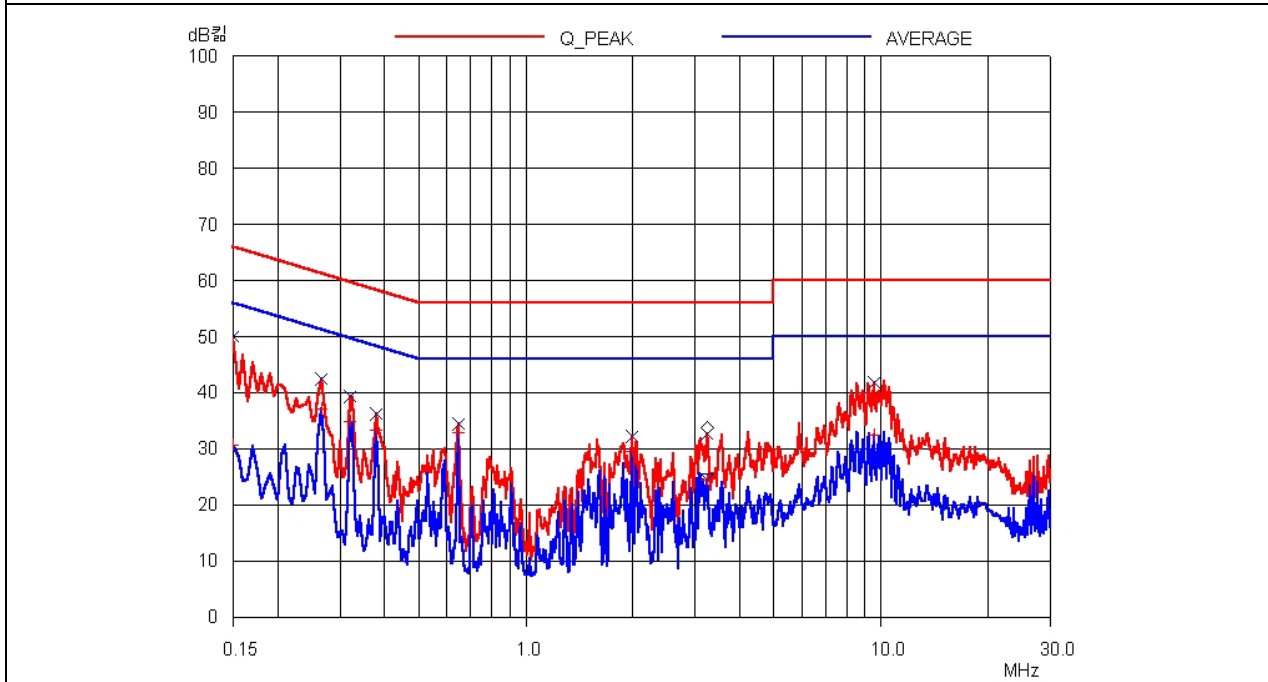
NEUTRAL LINE



Operating Condition : Data reading/writing mode.



HOT LINE



NEUTRAL LINE



5.1 Radiated Emission Test

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

Humidity Level : 41 % Temperature : 23 °C
 Limits apply to : FCC CFR 47, PART 15, SUBPART B
 Type of Test : Receiver
 Result : PASSED BY -4.93 dB at 408.00 MHz under data reading/writing mode

EUT : X-Pointer Date: August 26, 2004
 Operating Condition : Data receiving mode.
 Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
 Frequency Range : 30 MHz ~ 2 GHz
 Distance : 3 Meter

Radiated Emission		Ant	Correction Factors		Total	FCC LIMIT	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
45.87	11.50	H	12.25	1.00	24.75	40.00	-15.25
140.02	14.20	H	14.42	1.67	30.29	43.52	-13.23
216.00	13.40	H	16.62	2.11	32.13	43.52	-11.39
240.00	14.90	H	17.13	2.27	34.30	46.02	-11.72
300.00	13.90	H	13.65	2.67	30.22	46.02	-15.80
336.02	15.10	H	13.76	2.67	31.53	46.02	-14.49
423.19	12.10	H	15.74	2.99	30.83	46.02	-15.19

Radiated Emission Tabulated Data



Operating Condition : Data reading/writing mode.

Radiated Emission		Ant	Correction Factors		Total	FCC LIMIT	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
60.00	15.10	H	8.19	1.17	24.46	40.00	-15.54
144.00	14.50	H	14.65	1.74	30.89	43.52	-12.63
192.00	17.00	H	16.38	2.00	35.38	43.52	-8.14
204.00	17.70	H	16.37	2.03	36.10	43.52	-7.42
264.00	19.80	H	17.78	2.44	40.02	46.02	-6.00
312.00	20.30	H	13.55	2.67	36.52	46.02	-9.50
336.00	20.60	H	13.76	2.67	37.03	46.02	-8.99
384.00	20.00	H	15.09	2.78	37.87	46.02	-8.15
396.00	22.90	H	15.31	2.82	41.03	46.02	-4.99
408.00	22.70	H	15.51	2.88	41.09	46.02	-4.93
503.99	13.60	H	17.24	3.34	34.18	46.02	-11.84
648.00	13.10	V	19.37	3.82	36.29	46.02	-9.73
696.00	12.70	H	20.19	3.83	36.72	46.02	-9.30

기흥

Tested by: G. H. Nam / Test Engineer



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)

**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	DEC/03	12MONTH	■
2.	Test receiver	R/S	ESHS 10	834467/007	MAY/04	12MONTH	■
3.	Spectrum analyzer	HP	8566B	3407A08547	JUL/04	12MONTH	
4.	Spectrum analyzer	HP	8568B	3109A05456	JUL/04	12MONTH	■
5.	RF preselector	HP	85685A	3107A01264	APR/04	12MONTH	■
6.	Quasi-Peak Adapter	HP	85650A	3107A01542	JUL/04	12MONTH	■
7.	TRILOG Broadband Antenna	Schwarzbeck	VULB9163	VULB9163 166	FEB/04	12MONTH	
8.	Biconical antenna	EMCO	3104C	9109-4443	MAY/04	12MONTH	■
		Schwarzbeck	VHA9103	91031852	JAN/04		
9.	Log Periodic antenna	EMCO	3146	9109-3213	FEB/04	12MONTH	
				9109-3217	MAY/04		
		Schwarzbeck	9108-A(494)	62281001	JAN/04		■
10.	LISN	EMCO	3825/2	9109-1867	JUL/04	12MONTH	■
				9109-1869	OCT/03		■
11.	Position Controller	HD GmbH	HD100	N/A	N/A	N/A	■
12.	Turn Table	HD GmbH	DS420S	N/A	N/A	N/A	■
13.	Antenna Master	HD GmbH	MA240	N/A	N/A	N/A	■