



# 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

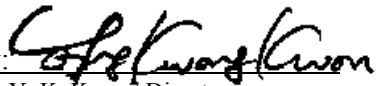
Date of Issuing : September 3, 2004

## 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/ Chief Engineer  
EMC Div.  
ONETECH Corp.

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



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**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<br>- 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<br>AUTHORIZATION REQUESTED            | CERTIFICATION                                                                           |
| EQUIPMENT WILL BE OPERATED<br>UNDER FCC RULES PART(S)   | FCC PART 15, SECTION 15.101                                                             |
| MODIFICATIONS ON THE EQUIPMENT<br>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<br>RECEIVER<br>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<br>CRY. FREQ. (FREQ. >= 1MHz) |                      | 47.0244 MHz and 10.24 MHz on Main Board<br>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<br>(MHz) | Line | Peak (dBuV)    |            | Margin<br>(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<br>(MHz) | Line | Average (dBuV) |            | Margin<br>(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

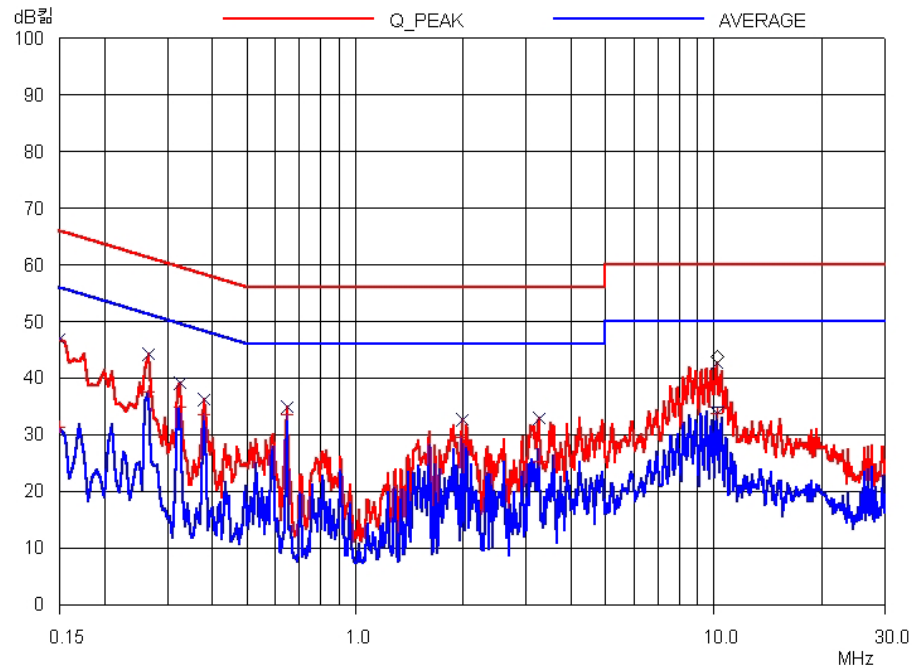
See next page for an overview sweep performed with peak and average detector.

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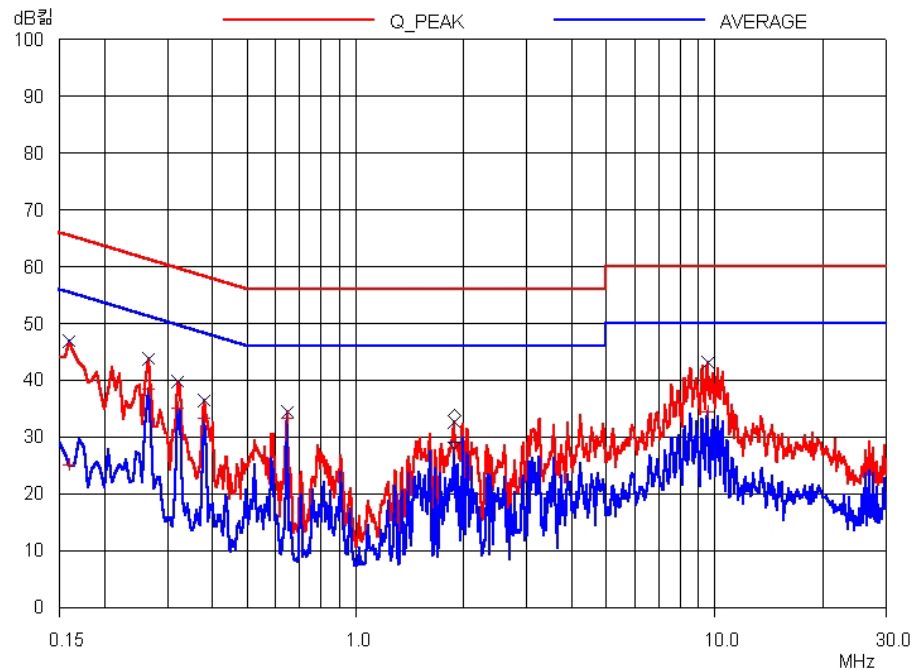
Tested by: G. H. Nam / Test Engineer



Operating Condition : Data receiving mode.



## HOT LINE



## NEUTRAL LINE

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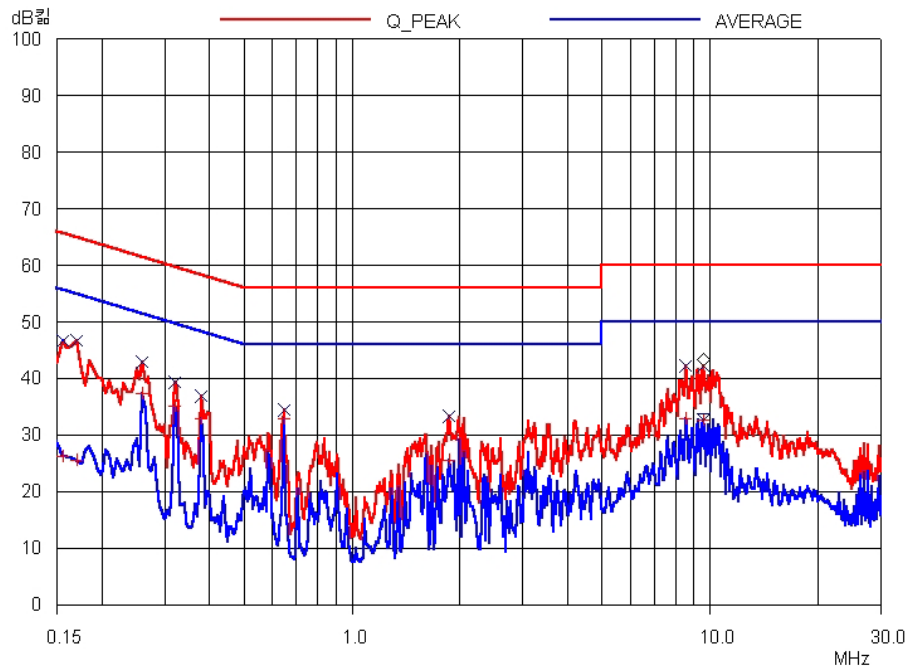
FCC-003 (Rev.0)

**HEAD OFFICE** : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Gyunggi-Do, 462-121, Korea  
(TEL: +82-31-746-8500, FAX: +82-31-746-8700)

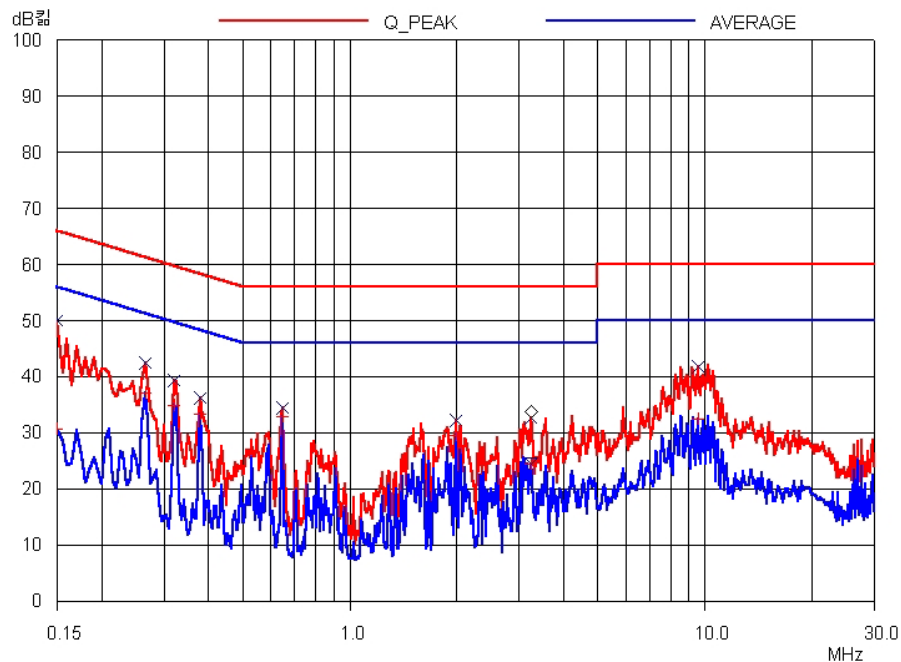
**EMC Testing Dept** : 426-1 Daessangryung-Ri, Chowol-Myun, Gwangju-City, Gyunggi-Do 464-860 Korea. (TEL: +82-31-765-8289, FAX: +82-31-766-2904)



Operating Condition : Data reading/writing mode.



## HOT LINE



## NEUTRAL LINE

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**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.<br>(MHz)    | Amp.<br>(dBuV) | Pol. | Ant.<br>(dBuV/m)   | Cable<br>(dB) | Amp.<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(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.<br>(MHz)    | Amp.<br>(dBuV) | Pol. | Ant.<br>(dBuV/m)   | Cable<br>(dB) | Amp.<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(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          |

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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     | ■   |