

Recognized by the  
Federal Communications Commission  
**FCC–Identification Number: 90462**  
**TCB ID: DE 0001**



Accredited by the  
German Accreditation Council  
**DAR–Registration Number**  
**TTI–P–G 166/98**



Independent ETSI  
compliance test house



**Accredited Bluetooth™ Test Facility (BQTF)**

**Test report no.: 2-3163-01-03/03**

**FCC Part 15.209**

**LUFX**

**FCC ID: J2LLUFX**

CETECOM – ICT Services GmbH  
Untertürkheimerstr. 6-10  
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## 1 General information

### 1.1 Notes

The test results of this test report relate exclusively to the test item specified in 1.5.

The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.

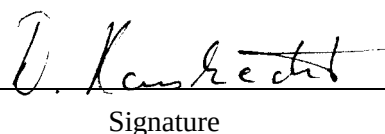
#### Test laboratory manager:

|            |            |         |
|------------|------------|---------|
| 2003-02-27 | RSC - 8411 | Berg M. |
| Date       | Section    | Name    |



#### Technical responsibility for area of testing:

|            |            |               |
|------------|------------|---------------|
| 2003-02-27 | RSC - 8412 | Hausknecht D. |
| Date       | Section    | Name          |



## 1.2 Testing laboratory

CETECOM ICT Services GmbH

Untertürkheimer Straße 6 - 10

66117 Saarbrücken

Germany

Telephone : + 49 681 598 - 0

Telefax : + 49 681 598 - 9075

E-mail : Michael.Berg@ict.cetecom.de

Internet : www.cetecom-ict.de

### Accredited testing laboratory

Accredited by : Regulierungsbehörde für Telekommunikation und Post (RegTP)

Listed by : Federal Communications Commission (FCC)

| Authority | Identification/Registration No. |
|-----------|---------------------------------|
| RegTP     | TTI-P-G 166/98-30               |
| FCC       | 90462                           |

## 1.3 Details of applicant

Name : FUJI XEROX CO., LTD

Street : 3-7-1, Funai, Iwatsuki-shi

City : Saitama 339-8509

Country : Japan

Telephone: +81-48-798-5111

Telex : +81-48-790-1930

E-mail : Tsuneo.imada@fujixerox.co.jp

### Contact person:

Name : Mr. Tsuneo Imada

Telephone : +81-48-798-5111

Telex : +81-48-790-1930

E-mail :

## 1.4 Application details

Date of receipt of test item : 2003-01-20

Date of test : 2003-01-20

Person(s) who have been : Mr. Masayuki Hirata

present during the test : masayuki.hirata@fujixerox.co.jp

## 1.5 Test item

Type of equipment : Paasiv transponder reader for toner cartridges  
Type designation : LUFX (Part composition: LUFX-C, LUFX-A, LUFX-T)  
Manufacturer : Same as applicant  
Street :  
City :  
Country :  
Serial number : - / -

### **Additional information :**

Frequency : 125 kHz  
  
Channel spacing : -.-  
Number of channels : 1  
Antenna : Integral antenna  
ERP : 65.6 dB $\mu$ V/m in 3m distance or 25.6 dB $\mu$ V/m in 300m distance  
Power supply : 3.3V DC ext.  
Temperature range : 0°C - +55°C  
FCC ID : J2LLUFX

## 1.6 Test specifications: **FCC Part 15 §15.209** **CANADA RSS-210**

## 2 Technical test

### 2.1 Summary of test results

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 20 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber.

The receiving antennas are conform with specifications ANSI C63.2-1987 clause 15 and ANSI C63.4-1992 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test set-ups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received.

The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63-4-1992 clause 4.2.

Antennas are conform with ANSI C63.2-1996 item 15.

150 kHz - 30 MHz: Quasi Peak measurement, 9kHz Bandwidth, passive loop antenna.

30 MHz - 200 MHz: Quasi Peak measurement, 120KHz Bandwidth, biconical antenna

200MHz - 1GHz: Quasi Peak measurement, 120KHz Bandwidth, log periodic antenna

>1GHz: Average, RBW 1MHz, VBW 10 Hz, wave guide horn

All measurement settings are according to FCC 15.35, 15.209.

The product fulfils also the requirements for CANADA RSS-210

No deviations from the technical specification(s) were ascertained in the course of the tests performed.

**FINAL VERDICT : PASS**

## **2.2 Test report**

### **TEST REPORT**

**Test report no: 2-3163-01-03/03**

## LIST OF MEASUREMENTS.

The list of measured parameters is given below.

| Clause   |                                | Page number |
|----------|--------------------------------|-------------|
|          | Transmitter parameters         |             |
| § 15.209 | Effective radiated RF power    | 9           |
| § 15.209 | Spurious radiations – Radiated | 10          |
|          | Test equipment listing         | 14          |
|          | Photographs of the equipment   | 16          |



Equipment under test : LUFX

Ambient temperature : 23°C

Relative humidity : 33%

## MAXIMUM PEAK OUTPUT POWER (RADIATED)

| TEST CONDITIONS                                                         |                           | MAXIMUM PEAK OUTPUT POWER (µV/m) |  |  |
|-------------------------------------------------------------------------|---------------------------|----------------------------------|--|--|
| Frequency (MHz)                                                         |                           | 125 kHz                          |  |  |
| T <sub>nom</sub> ( 23 )°C                                               | V <sub>nom</sub> ( 3.3 )V | 1.91µV/m<br>(5.6 dBµV/m)         |  |  |
| Maximum deviation from output power under extreme test conditions (dBc) |                           | not applicable                   |  |  |
| Measurement uncertainty                                                 |                           | ±3dB                             |  |  |

RBW/VBW : 0,2kHz

Limit for 125 kHz is 19.20 µV/m or 25.666 dBµV/m in 300m measurement distance

Limits

SUBCLAUSE § 15.109

| Frequency (MHz) | Field strength (µV/m) | Measurement distance (m) |
|-----------------|-----------------------|--------------------------|
| 0.009 – 0.490   | 2400/F(kHz)           | 300                      |
| 0.490 – 1.705   | 24000/F(kHz)          | 30                       |
| 1.705 – 30.0    | 30                    | 30                       |
| 30 - 88         | 100                   | 3                        |
| 88 - 216        | 150                   | 3                        |
| 216 - 960       | 200                   | 3                        |
| above 960       | 500                   | 3                        |

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED  
(for reference numbers see test equipment listing)

17 – 24: 53 , 54 , 62

Equipment under test : LUFX

Ambient temperature : 23°C

Relative humidity : 33%

## SPURIOUS RADIATION

§ 15.209

### Radiated RF Power on

| SPURIOUS EMISSIONS LEVEL (µV/m) |          |                 |                 |                |          |  |  |  |
|---------------------------------|----------|-----------------|-----------------|----------------|----------|--|--|--|
| 125 kHz                         |          |                 |                 |                |          |  |  |  |
| f<br>(MHz)                      | Detector | Level<br>(µV/m) | Limit<br>(µV/m) | Margin<br>(dB) | Results  |  |  |  |
| 0.2236                          | QP/V     | 0.10            | 10.73           | 40,6           | complies |  |  |  |
| 42.65                           | QP/V     | 31.99           | 100             | 9.9            | complies |  |  |  |
| 65.90                           | QP/V     | 12.30           | 100             | 18.2           | complies |  |  |  |
| 115.05                          | QP/V     | 33.50           | 150             | 12.5           | complies |  |  |  |
| 115.62                          | QP/H     | 11.89           | 150             | 21.5           | complies |  |  |  |
|                                 |          |                 |                 |                |          |  |  |  |
|                                 |          |                 |                 |                |          |  |  |  |
| Measurement uncertainty         |          |                 | ±3 dB           |                |          |  |  |  |

f < 1 GHz : RBW/VBW: 100 kHz

f ≥ 1GHz : RBW/VBW: 1 MHz

H = Horizontal ; V= Vertical

Measurement distance see table

### Limits

SUBCLAUSE § 15.209

| Frequency (MHz) | Field strength (µV/m) | Measurement distance (m) |
|-----------------|-----------------------|--------------------------|
| 0.009 – 0.490   | 2400/F(kHz)           | 300                      |
| 0.490 – 1.705   | 24000/F(kHz)          | 30                       |
| 1.705 – 30.0    | 30                    | 30                       |
| 30 - 88         | 100                   | 3                        |
| 88 - 216        | 150                   | 3                        |
| 216 - 960       | 200                   | 3                        |
| above 960       | 500                   | 3                        |

### REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24: 53 , 54 , 62

Equipment under test : LUFX

Ambient temperature : 23°C

Relative humidity : 33%

## Plots of the measurements

### *FCC Rule 47*

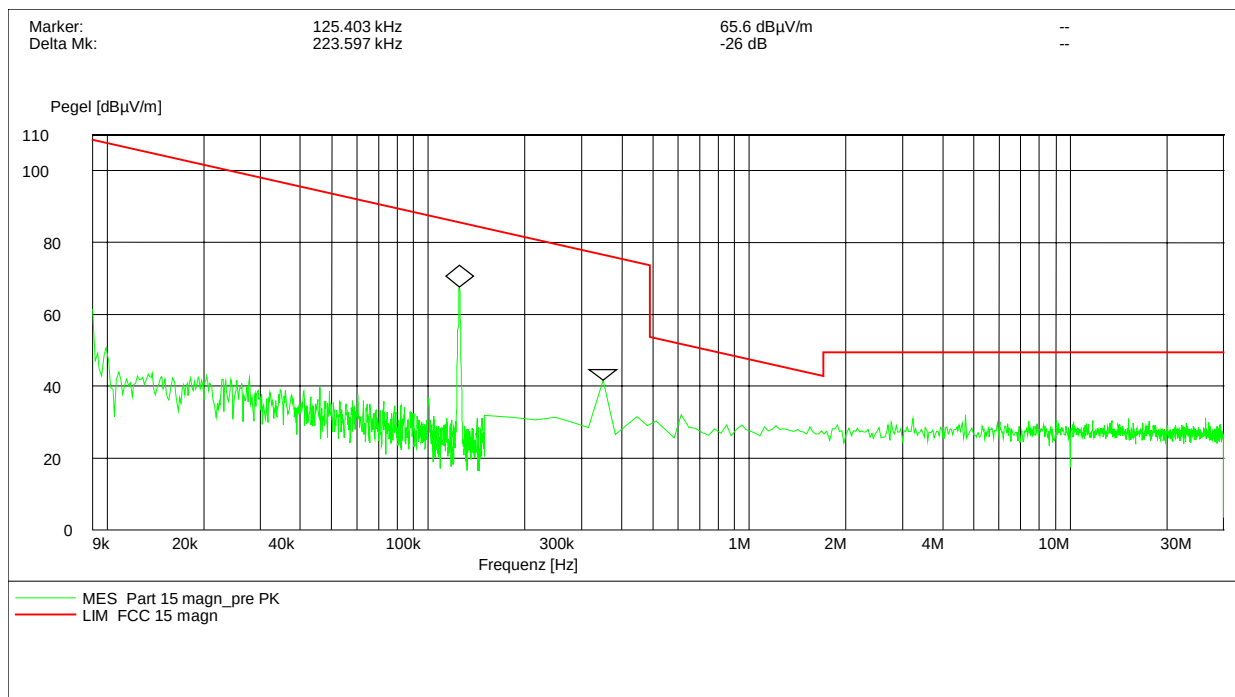
#### *Part 15 Magnetics*

EUT: LUFX (System)  
 Manufacturer: Fuji Xerox  
 Operating Condition: Transmit mode  
 Test Site: Room 6  
 Operator: Berg  
 Test Specification: FCC 15.209  
 Comment:  
 Start of Test: 26.02.03 / 10:10:42

#### **SCANTABELLE: "FCC 15 magn"**

Kurzbeschreibung: Voltage Mains 1.60

| Start-Frequenz | Stop-Frequenz | Schrittweite | Detektor | Meßzeit  | ZF-Bandbr. | Transducer       |
|----------------|---------------|--------------|----------|----------|------------|------------------|
| 9.0 kHz        | 1 50.0 kHz    | 100.0 Hz     | MaxPeak  | 100.0 ms | 0.2 kHz    | HFH2-Z2 (dBµV/m) |
| 150.0 kHz      | 30.0 MHz      | 10.0 kHz     | MaxPeak  | 100.0 ms | 10 kHz     | HFH2-Z2 (dBµV/m) |



Measurement distance 3m

This measurement was done in 3 polarisation's, the plot shows the worst case (Coil antenna and controller PCB vertical)

### **REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**

(for reference numbers see test equipment listing)

17 – 24: 53 , 54 , 62

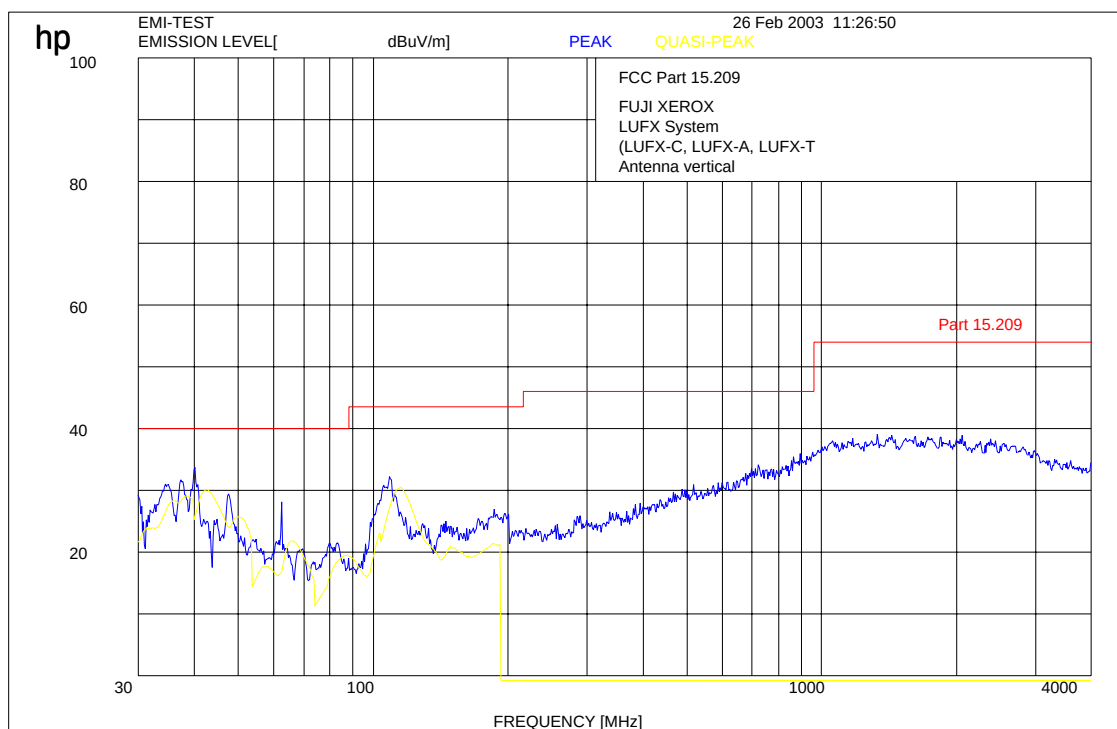
Equipment under test : LUFX

Ambient temperature : 23°C

Relative humidity : 33%

## Plots of the measurements

### Vertical



## REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24: 53 , 54 , 62

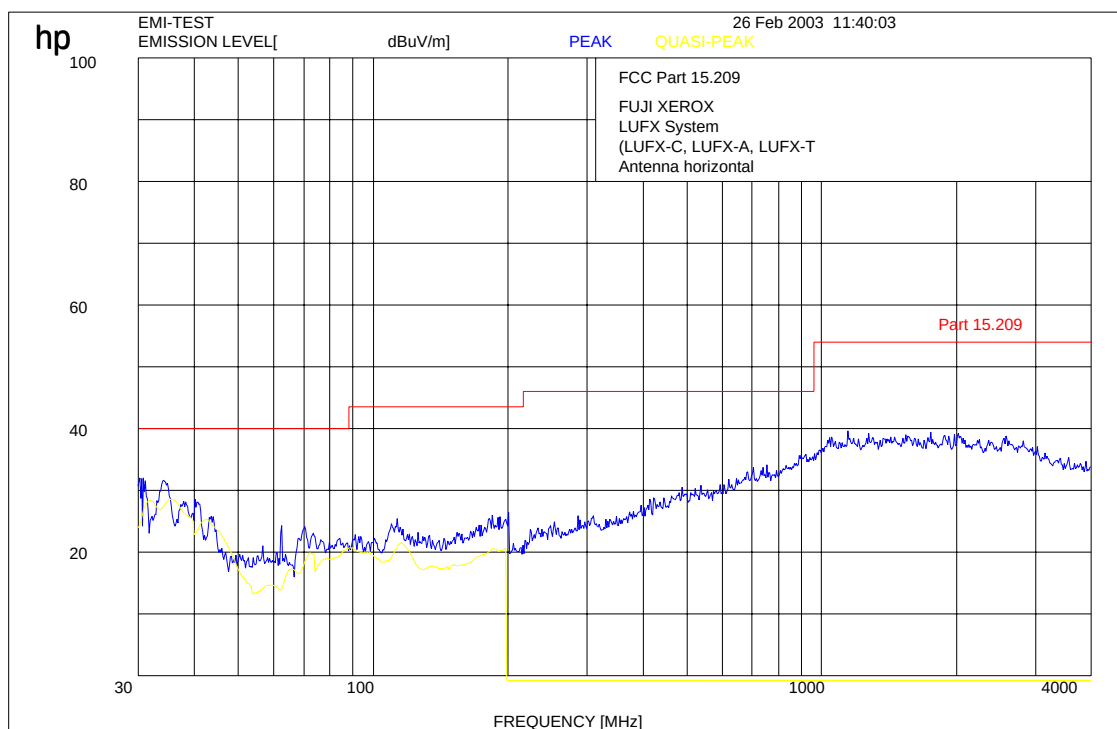
Equipment under test : LUFX

Ambient temperature : 23°C

Relative humidity : 33%

## Plots of the measurements

### Vertical



## REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24: 53 , 54 , 62

**TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS**

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

| No | Instrument/Ancillary  | Type      | Manufacturer    | Serial No.  |
|----|-----------------------|-----------|-----------------|-------------|
| 01 | Spectrum Analyzer     | 8566 A    | Hewlett-Packard | 1925A00257  |
| 02 | Analyzer Display      | 8566 A    | Hewlett-Packard | 1925A00860  |
| 03 | Oscilloscope          | 7633      | Tektronix       | 230054      |
| 04 | Radio Analyzer        | CMTA 54   | Rohde & Schwarz | 894 043/010 |
| 05 | System Power Supply   | 6038 A    | Hewlett-Packard | 2848A07027  |
| 06 | Signal Generator      | 8111 A    | Hewlett-Packard | 2215G00867  |
| 07 | Signal Generator      | 8662 A    | Hewlett-Packard | 2224A01012  |
| 08 | Funktionsgenerator    | AFGU      | Rohde & Schwarz | 862 480/032 |
| 09 | Regeltrenntrafo       | MPL       | Erft            | 91350       |
| 10 | Netznachbildung       | NNLA 8120 | Schwarzbeck     | 8120331     |
| 11 | Relais-Matrix         | PSU       | Rohde & Schwarz | 893 285/020 |
| 12 | Power-Meter           | 436 A     | Hewlett-Packard | 2101A12378  |
| 13 | Power-Sensor          | 8484 A    | Hewlett-Packard | 2237A10156  |
| 14 | Power-Sensor          | 8482 A    | Hewlett-Packard | 2237A00616  |
| 15 | Modulationsmeter      | 9008      | Racal-Dana      | 2647        |
| 16 | Frequenzzähler        | 5340 A    | Hewlett-Packard | 1532A03899  |
| 17 | Absorber Schirmkabine | ---       | MWB             | 87400/002   |
| 18 | Spectrum Analyzer     | 85660 B   | Hewlett-Packard | 2747A05306  |
| 19 | Analyzer Display      | 85662 A   | Hewlett-Packard | 2816A16541  |
| 20 | Quasi Peak Adapter    | 85650 A   | Hewlett-Packard | 2811A01131  |
| 21 | RF-Preselector        | 85685 A   | Hewlett-Packard | 2833A00768  |
| 22 | Biconical Antenne     | 3104      | Emco            | 3758        |
| 23 | Log. Per. Antenne     | 3146      | Emco            | 2130        |
| 24 | Double Ridge Horn     | 3115      | Emco            | 3088        |
| 25 | EMI-Testreceiver      | ESAI      | Rohde & Schwarz | 863 180/013 |
| 26 | EMI-Analyzer-Display  | ESAI-D    | Rohde & Schwarz | 862 771/008 |
| 27 | Biconical Antenne     | HK 116    | Rohde & Schwarz | 888 945/013 |
| 28 | Log. Per. Antenne     | HL 223    | Rohde & Schwarz | 825 584/002 |
| 29 | Relais-Switch-Unit    | RSU       | Rohde & Schwarz | 375 339/002 |
| 30 | Highpass              | HM985955  | FSY Microwave   | 001         |
| 31 | Amplifier             | P42-GA29  | Tron-Tech       | B 23602     |
| 32 | Absorber Schirmkabine |           | Frankonia       |             |
| 33 | Steuerrechner         | PSM 7     | Rohde & Schwarz | 834 621/004 |
| 34 | EMI Test Receiver     | ESMI      | Rohde & Schwarz | 827 063/010 |
| 35 | EMI Test Receiver     | Display   | Rohde & Schwarz | 829 808/010 |

**TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS**

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

| No | Instrument/Ancillary                   | Type      | Manufacturer    | Serial No.  |
|----|----------------------------------------|-----------|-----------------|-------------|
| 36 | Controler                              | HD 100    | Deisel          | 100/322/93  |
| 37 | Relais Matrix                          | PSN       | Rohde & Schwarz | 829 065/003 |
| 38 | Control Unit                           | GB 016 A2 | Rohde & Schwarz | 344 122/008 |
| 39 | Relais Switch Unit                     | RSU       | Rohde & Schwarz | 316 790/001 |
| 40 | Power Supply                           | 6032A     | Hewlett Packard | 2846A04063  |
| 41 | Spektrum Monitor                       | EZM       | Rohde & Schwarz | 883 720/006 |
| 42 | Meßempfänger                           | ESH 3     | Rohde & Schwarz | 890 174/002 |
| 43 | Meßempfänger                           | ESVP      | Rohde & Schwarz | 891 752/005 |
| 44 | Biconi Ant. 20-300MHz                  | HK 116    | Rohde & Schwarz | 833 162/011 |
| 45 | Logper Ant. 0.3-1 GHz                  | HL 223    | Rohde & Schwarz | 832 914/010 |
| 46 | Amplifier 0.1-4 GHz                    | AFS4      | Miteq Inc.      | 206461      |
| 47 | Logper Ant. 1-18 GHz                   | HL 024 A2 | Rohde & Schwarz | 342 662/002 |
| 48 | Polarisationsnetzwerk                  | HL 024 Z1 | Rohde & Schwarz | 341 570/002 |
| 49 | Double Ridge G Horn Antenne 1-26.5 GHz | 3115      | EMCO            | 9107-3696   |
| 50 | Microw. Sys. Amplifier 0.5- 26.5 GHz   | 8317A     | Hewlett Packard | 3123A00105  |
| 51 | Spectrum Analyzer                      | 8562A     | Hewlett Packard | 2809AO2682  |
| 52 | Steuerrechner                          | PSM 7     | Rohde & Schwarz | 883 086/026 |
| 53 | DC V-Netzwerk                          | ESH3-Z6   | Rohde & Schwarz | 861 406/005 |
| 54 | DC V-Netzwerk                          | ESH3-Z6   | Rohde & Schwarz | 893 689/012 |
| 55 | AC 2 Phasen V-Netzwerk                 | ESH3-Z5   | Rohde & Schwarz | 861 189/014 |
| 56 | AC 2 Phasen V-Netzwerk                 | ESH3-Z5   | Rohde & Schwarz | 894 981/019 |
| 57 | AC-3 Phasen V-Netzwerk                 | ESH2-Z5   | Rohde & Schwarz | 882 394/007 |
| 58 | Stromversorgung                        | 6032A     | Rohde & Schwarz | 2933A05441  |
| 59 | HF-Test Empfänger                      | ESVP.52   | Rohde & Schwarz | 881 487/021 |
| 60 | Spectrum Monitor                       | EZM       | Rohde & Schwarz | 883 086/026 |
| 61 | HF-Test Empfänger                      | ESH3      | Rohde & Schwarz | 881 515/002 |
| 62 | Relais Matrix                          | PSU       | Rohde & Schwarz | 882 943/029 |
| 63 | Relais Matrix                          | PSU       | Rohde & Schwarz | 828 628/007 |
| 64 | Spectrum Analyzer                      | FSIQ 26   | Rohde & Schwarz | 119.6001.27 |
| 65 | Spectrum Analyzer                      | HP 8565E  | Hewlett Packard | 3473A00773  |
| 66 |                                        |           |                 |             |