

## FCC Part 22/24 Compliance Test Report

|                                                         |                                                                                                                                                                                                                                                                                                                              |                                   |                                                                                                                               |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Report no.:</b>                                 | Cph_FCC_0822_22.doc                                                                                                                                                                                                                                                                                                          | <b>Date of Report:</b>            | 16-Jun-2008                                                                                                                   |
| <b>Number of pages:</b>                                 | 12                                                                                                                                                                                                                                                                                                                           | <b>Customer's Contact person:</b> | Bill Griffin                                                                                                                  |
| <b>Testing laboratory:</b>                              | TCC Nokia Copenhagen Laboratory<br>Frederikskaj<br>1790 COPENHAGEN V<br>DENMARK<br>Tel. +45 33 292929<br>Fax. +45 33 292934                                                                                                                                                                                                  | <b>Customer:</b>                  | Nokia Corporation<br>12278 Scripps Summit Drive<br>SAN DIEGO CA. 92131<br>USA<br>Tel. +1 858 831 5000<br>Fax. +1 858 831 6500 |
| <b>FCC listing no.:</b>                                 | 99059                                                                                                                                                                                                                                                                                                                        |                                   |                                                                                                                               |
| <b>IC recognition no.:</b>                              | 661AD-1                                                                                                                                                                                                                                                                                                                      |                                   |                                                                                                                               |
| <b>Tested devices/ accessories:</b>                     | <b>Phone: RM-429 (hw0110), Battery: BL-5C, Headset: HS-47<br/>AC charger: AC-3U</b>                                                                                                                                                                                                                                          |                                   |                                                                                                                               |
| <b>FCC ID:</b>                                          | QMNRM-429                                                                                                                                                                                                                                                                                                                    | <b>IC:</b>                        | 661X-RM429                                                                                                                    |
| <b>Supplement reports:</b>                              | None                                                                                                                                                                                                                                                                                                                         |                                   |                                                                                                                               |
| <b>Testing has been carried out in accordance with:</b> | <b>CFR 47, FCC rules Parts 22 and 24, TIA-603-C-2004 and IC standards RSS-GEN (Issue 2, June 2007), RSS-132 (Issue 2, September 2005) and RSS-133 (Issue 4, February 2008). Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".</b> |                                   |                                                                                                                               |
| <b>Documentation:</b>                                   | The test report must always be reproduced in full; reproduction of an excerpt only is subject to written approval of the testing laboratory. The documentation of the testing performed on the tested devices is archived for 15 years at TCC Nokia.                                                                         |                                   |                                                                                                                               |
| <b>Test Results:</b>                                    | <b>The EUT complies with the requirements in respect of all parameters subject to the test.</b><br>The test results relate only to devices specified in this document.                                                                                                                                                       |                                   |                                                                                                                               |
| <b>Date and signature for the contents:</b>             |                                                                                                                                                                                                                                                                                                                              |                                   |                                                                                                                               |

Jan Engelbrechtsen, Test System Manager

## 1. Summary for FCC Part 22/24 Compliance Test Report

|                               |                                                        |
|-------------------------------|--------------------------------------------------------|
| Date of receipt               | 19-May-2008                                            |
| Testing completed             | 30-May-2008                                            |
| The customer's contact person | Bill Griffin                                           |
| Test Plan referred to         | T:\Projects\RM-429\TestPlan_RS\RS_Testplan_RM-429.xls  |
| Notes                         | None                                                   |
| Document name                 | T:\Projects\RM-429\EMC\Results\FCC\Cph_FCC_0822_22.doc |

### 1.1. EUT and Accessory Information

The EUT is a 4-band (GSM850/900/1800/1900) mobile phone with GPRS, EGPRS and Bluetooth. The EUT is tested with maximum rated TX power, modulated with pseudo random bit sequence (PRBS9).

| Product    | Type   | SN                          | HW   | MV | SW     | DUT   |
|------------|--------|-----------------------------|------|----|--------|-------|
| Phone      | RM-429 | 004401/10/063960/4          | 0110 | -  | V03.46 | 26991 |
| Battery    | BL-5C  | 06703984620400195F20831720  | -    | -  | -      | 26992 |
| Headset    | HS-47  | 0694579713322602339         | -    | -  | -      | 26081 |
| AC charger | AC-3U  | 4090495245921004835;0675372 | -    | -  | -      | 26994 |

### 1.2. Summary of Test Results

#### GSM 850:

| Section in CFR 47     | Section in RSS-GEN or RSS-132 | Name of the test                           | Result |
|-----------------------|-------------------------------|--------------------------------------------|--------|
| §2.1046(a), 22.913(a) | 4.4                           | Conducted RF output power                  | NP     |
| §22.913(a)            | 4.4                           | Radiated RF output power                   | NP     |
| §2.1049(h)            | 4.6.1                         | 99 % occupied bandwidth                    | Passed |
| §22.917(a)            | 4.5                           | Band edge compliance                       | NP     |
| §22.917(a), §2.1051   | 4.5                           | Spurious emissions at antenna terminals    | NP     |
| §22.917(a), §2.1053   | 4.5                           | Spurious radiated emissions                | NP     |
| §2.1055(a)            | 4.3                           | Frequency stability, temperature variation | Passed |
| §2.1055(d)            | 4.3                           | Frequency stability, voltage variation     | Passed |

#### GSM 1900:

| Section in CFR 47   | Section in RSS-GEN or RSS-133 | Name of the test                           | Result |
|---------------------|-------------------------------|--------------------------------------------|--------|
| §2.1046(a)          | 6.4                           | Conducted RF output power                  | NP     |
| §24.232(b)          | 6.4                           | Radiated RF output power                   | NP     |
| §2.1049(h)          | 4.6.1                         | 99 % occupied bandwidth                    | Passed |
| §24.238(a)          | 6.5                           | Band edge compliance                       | NP     |
| §24.238(a), §2.1051 | 6.5                           | Spurious emissions at antenna terminals    | NP     |
| §24.238(a), §2.1053 | 6.5                           | Spurious radiated emissions                | NP     |
| §2.1055(a)          | 6.3                           | Frequency stability, temperature variation | Passed |
| §2.1055(d)          | 6.3                           | Frequency stability, voltage variation     | Passed |

PASSED

FAILED

NP

The EUT complies with the essential requirements in the standard.

The EUT does not comply with the essential requirements in the standard.

The test was not performed by the TCC Nokia Copenhagen Laboratory.

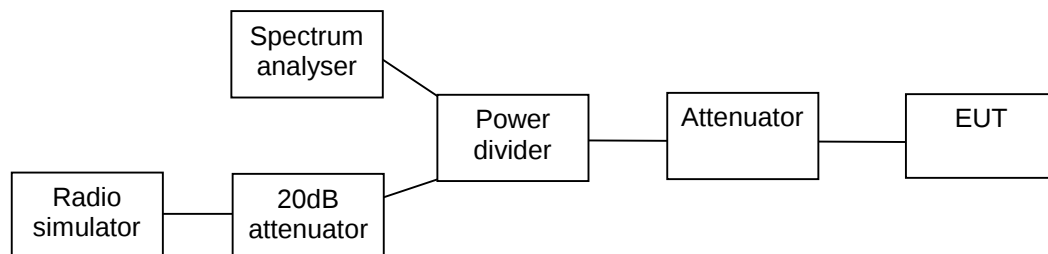
## CONTENTS

|                                                                                                           |           |
|-----------------------------------------------------------------------------------------------------------|-----------|
| <b>1. Summary for FCC Part 22/24 Compliance Test Report .....</b>                                         | <b>2</b>  |
| 1.1. EUT and Accessory Information .....                                                                  | 2         |
| 1.2. Summary of Test Results .....                                                                        | 2         |
| <b>2. 99 % occupied bandwidth<br/>(FCC §2.1049(h), RSS-GEN 4.6.1) .....</b>                               | <b>4</b>  |
| 2.1. Test setup .....                                                                                     | 4         |
| 2.2. Test method and limit .....                                                                          | 4         |
| 2.3. GSM 850 Test results .....                                                                           | 5         |
| 2.4. GSM 1900 Test results .....                                                                          | 6         |
| <b>3. Frequency stability, temperature variation<br/>(FCC §2.1055(a), RSS-132 4.3, RSS-133 6.3) .....</b> | <b>7</b>  |
| 3.1. Test setup .....                                                                                     | 7         |
| 3.2. Test method and limit .....                                                                          | 7         |
| 3.3. GSM 850 Test results .....                                                                           | 8         |
| 3.4. GSM 1900 Test results .....                                                                          | 8         |
| <b>4. Frequency stability, voltage variation<br/>(FCC §2.1055(d), RSS-132 4.3, RSS-133 6.3) .....</b>     | <b>9</b>  |
| 4.1. Test setup .....                                                                                     | 9         |
| 4.2. Test method and limit .....                                                                          | 9         |
| 4.3. GSM 850 Test results .....                                                                           | 10        |
| 4.4. GSM 1900 Test results .....                                                                          | 10        |
| <b>5. Test Equipment .....</b>                                                                            | <b>11</b> |
| 5.1. Conducted measurements .....                                                                         | 11        |
| 5.2. Radiated measurements .....                                                                          | 11        |

## 2. 99 % occupied bandwidth (FCC §2.1049(h), RSS-GEN 4.6.1)

|                                                        |                                   |
|--------------------------------------------------------|-----------------------------------|
| <b>EUT with DUT number</b>                             | RM-429 dut 26990, BL-5C dut 26991 |
| <b>Accessories with DUT numbers</b>                    | HS-47 dut 26081, AC-3U dut 26994  |
| <b>Operation Voltage [V] / [Hz]</b>                    | 230 / 50                          |
| <b>Result</b>                                          | Passed                            |
| <b>Remarks</b>                                         | None                              |
| <b>Temp [°C] / Humidity [%RH] / Air Pressure [kPa]</b> | 22.8 / 39<br>102.24               |
| <b>Date of measurements</b>                            | 30-May-2008                       |
| <b>Measured by</b>                                     | Jan Engelbrechtsen                |

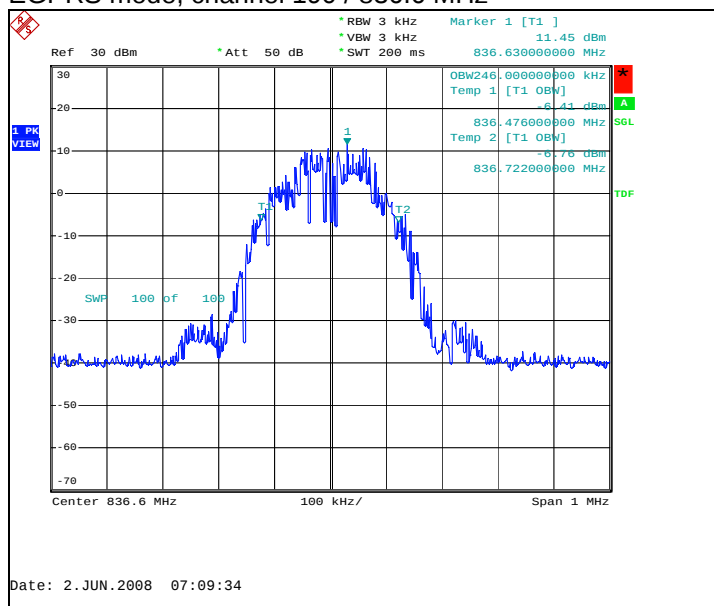
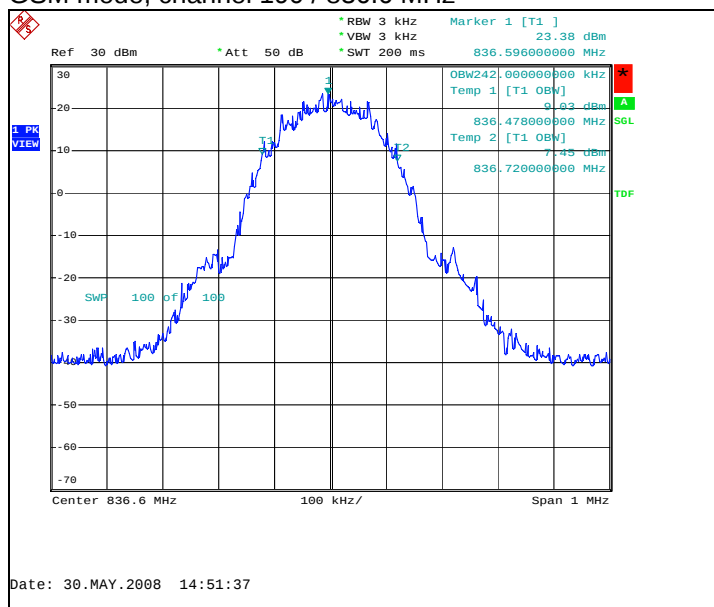
### 2.1. Test setup



### 2.2. Test method and limit

The measurement is made according to FCC rules parts 22 and 24 and IC standard RSS-GEN.

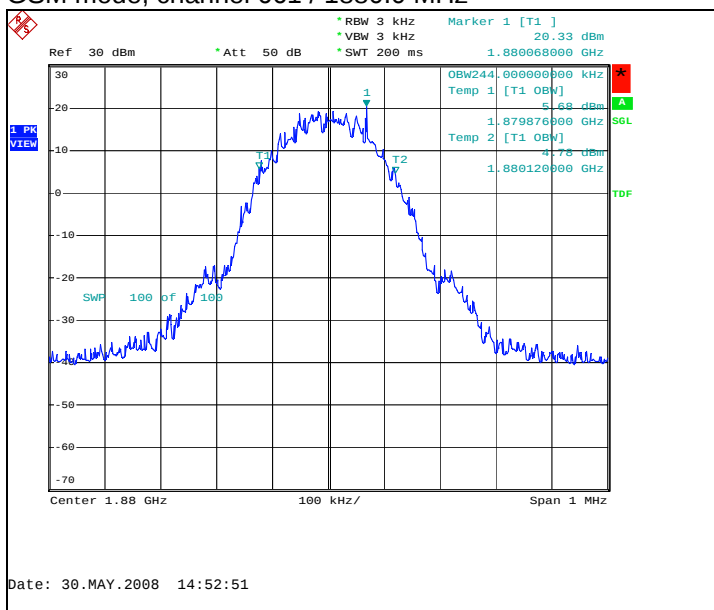
| Operation mode (TX on) | 99% occupied bandwidth [kHz] |
|------------------------|------------------------------|
| GSM                    | 242                          |
| EGPRS                  | 246                          |



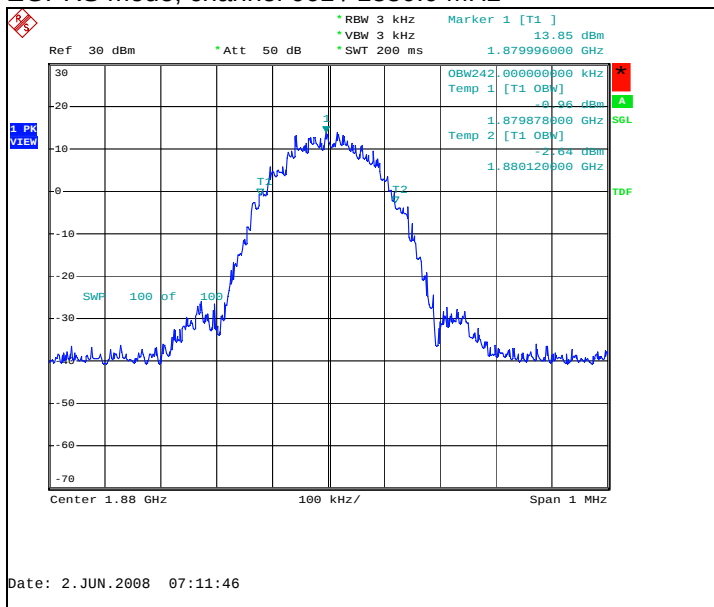
## 2.4. GSM 1900 Test results

| Operation mode (TX on) | 99% occupied bandwidth [kHz] |
|------------------------|------------------------------|
| GSM                    | 244                          |
| EGPRS                  | 242                          |

GSM mode, channel 661 / 1880.0 MHz



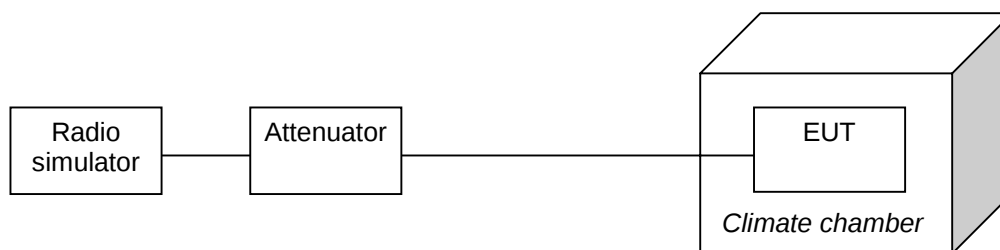
EGPRS mode, channel 661 / 1880.0 MHz



### 3. Frequency stability, temperature variation (FCC §2.1055(a), RSS-132 4.3, RSS-133 6.3)

|                                                        |                                   |
|--------------------------------------------------------|-----------------------------------|
| <b>EUT with DUT number</b>                             | RM-429 dut 26990, BL-5C dut 26991 |
| <b>Accessories with DUT numbers</b>                    | HS-47 dut 26081, AC-3U dut 26994  |
| <b>Operation Voltage [V] / [Hz]</b>                    | 230 / 50                          |
| <b>Result</b>                                          | Passed                            |
| <b>Remarks</b>                                         | None                              |
| <b>Temp [°C] / Humidity [%RH] / Air Pressure [kPa]</b> | 22.8 / 39<br>102.24               |
| <b>Date of measurements</b>                            | 30-May-2008                       |
| <b>Measured by</b>                                     | Jan Engelbrechtsen                |

#### 3.1. Test setup



#### 3.2. Test method and limit

The measurement is made according to FCC rules parts 22 and 24 and IC standards RSS-132 and RSS-133 as follows:

- The climate chamber temperature is set to the maximum value and the temperature is allowed to stabilize.
- The EUT is placed in the chamber.
- The EUT is set in idle mode for 15 minutes.
- The EUT is set to transmit.
- The transmit frequency error was measured immediately.
- The steps c - e were repeated for each temperature.

Limits for frequency stability, temperature variation measurements

| <b>Frequency deviation [ppm]</b> |
|----------------------------------|
| $\pm 2.5$                        |

### 3.3. GSM 850 Test results

GSM mode, channel 190 / 836.6 MHz

| Temperature [°C] | Deviation [Hz] | Deviation [ppm] |
|------------------|----------------|-----------------|
| 50               | -12            | -0.0143         |
| 40               | -15            | -0.0179         |
| 30               | 10             | 0.0120          |
| 20               | -11            | -0.0131         |
| 10               | 16             | 0.0191          |
| 0                | -18            | -0.0215         |
| -10              | -15            | -0.0179         |
| -20              | -13            | -0.0155         |
| -30              | -17            | -0.0203         |

### 3.4. GSM 1900 Test results

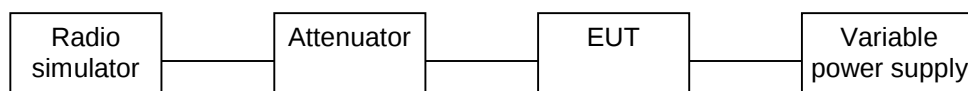
GSM mode, channel 661 / 1880.0 MHz

| Temperature [°C] | Deviation [Hz] | Deviation [ppm] |
|------------------|----------------|-----------------|
| 50               | -54            | -0.0287         |
| 40               | -48            | -0.0255         |
| 30               | -56            | -0.0298         |
| 20               | -42            | -0.0224         |
| 10               | -43            | -0.0229         |
| 0                | -29            | -0.0154         |
| -10              | -49            | -0.0261         |
| -20              | -43            | -0.0229         |
| -30              | -48            | -0.0255         |

#### 4. Frequency stability, voltage variation (FCC §2.1055(d), RSS-132 4.3, RSS-133 6.3)

|                                                            |                                   |
|------------------------------------------------------------|-----------------------------------|
| <b>EUT with DUT number</b>                                 | RM-429 dut 26990, BL-5C dut 26991 |
| <b>Accessories with DUT numbers</b>                        | HS-47 dut 26081                   |
| <b>Operation Voltage [V] / [Hz]</b>                        | DC power supply, Dummy battery    |
| <b>Result</b>                                              | Passed                            |
| <b>Remarks</b>                                             | None                              |
| <b>Temp [°C] / Humidity [%RH] /<br/>Air Pressure [kPa]</b> | 22.8 / 39<br>102.24               |
| <b>Date of measurements</b>                                | 30-May-2008                       |
| <b>Measured by</b>                                         | Jan Engelbrechtsen                |

##### 4.1. Test setup



##### 4.2. Test method and limit

The measurement is made according to FCC rules parts 22 and 24 and IC standards RSS-132 and RSS-133 as follows:

The EUT battery was replaced with an adjustable power supply. The frequency stability was measured at nominal voltage and at the battery cut-off point.

Limits for frequency stability, voltage variation measurements

| <b>Frequency deviation [ppm]</b> |
|----------------------------------|
| $\pm 2.5$                        |

#### 4.3. GSM 850 Test results

GSM mode, channel 190 / 836.6 MHz

| Voltage level [V]            | Deviation [Hz] | Deviation [ppm] |
|------------------------------|----------------|-----------------|
| Battery cut-off point / 3.30 | 15             | 0.0179          |
| Nominal / 3.70               | 9              | 0.0108          |

#### 4.4. GSM 1900 Test results

GSM mode, channel 661 / 1880.0 MHz

| Voltage level [V]            | Deviation [Hz] | Deviation [ppm] |
|------------------------------|----------------|-----------------|
| Battery cut-off point / 3.30 | -48            | -0.0255         |
| Nominal / 3.70               | -40            | -0.0213         |

## 5. Test Equipment

### 5.1. Conducted measurements

| Eq. No | Equipment                                      | Type      | Manufacturer    | Used in            |
|--------|------------------------------------------------|-----------|-----------------|--------------------|
| 13037  | Power Supply 0-15V 10A                         | EA3012    | LP Instruments  | 15C, 15B           |
| 13513  | Pulse Limiter 9KHz-30MHz                       | ESH3Z2    | Rohde&Schwarz   | 15C, 15B           |
| 13666  | EMI Test Reciever 9KHz-2,5GHz                  | ESPC      | Rohde&Schwarz   | 15C, 15B           |
| 13935  | Two Lines Artificial Mains Network             | ESH3-Z5   | Rohde&Schwarz   | 15C, 15B           |
| 16995  | Directional Coupler 20dB 0,5-2,0 GHz SMA Conn. | 1538RA-20 | Weinschel       | 15C, 15B           |
| 18772  | Shielded Chamber                               | RFD-100   | ETS-Lindgren    | 15C, 15B           |
| 19171  | Universal Radio Communication Tester           | CMU200    | Rohde&Schwarz   | 15C, 15B           |
| 11386  | System DC Power Supply                         | HP6632A   | Hewlett Packard | 22/24/27, 15C, 15B |
| 19678  | Spectrum Analyzer 26 GHz                       | FSP       | Rohde&Schwarz   | 22/24/27, 15C, 15B |
| 16601  | Universal Radio Communication Tester           | CMU200    | Rohde&Schwarz   | 22/24/27, 15C, 15B |
| 19625  | Vötsch Climatic Chamber                        | VT4002EMC | Vötsch          | 22/24/27, 15C, 15B |
| 13357  | Rohde & Schwartz Signal Generator              | SMP02     | Rohde&Schwarz   | 22/24/27, 15C, 15B |
| 20168  | Bluetooth EDR Tester                           | CBT       | Rohde&Schwarz   | 22/24/27, 15C, 15B |

### 5.2. Radiated measurements

| Eq. No | Equipment                                      | Type          | Manufacturer  | Used in            |
|--------|------------------------------------------------|---------------|---------------|--------------------|
| 18416  | Universal Radio Communication Tester           | CMU200        | Rohde&Schwarz | 22/24/27, 15C, 15B |
|        | Programmable Relay Switching System            | -----         | Pickering     | 22/24/27, 15C, 15B |
| 15742  | Programmable Relay Switching System            | -----         | Pickering     | 22/24/27, 15C, 15B |
| 14020  | Power Supply Module Relay Switching System 45W | 10-910-002    | Pickering     | 22/24/27, 15C, 15B |
| 15743  | Power Supply Module Relay Switching System 50W | 10-910L-001   | Pickering     | 22/24/27, 15C, 15B |
| 16490  | RS-232/IEEE-488.2 Interface                    | 10-921-001    | Pickering     | 22/24/27, 15C, 15B |
|        | RS-232/IEEE-488.2 Interface                    | 10-921-001    | Pickering     | 22/24/27, 15C, 15B |
| 20078  | Relay 2x6 Chnl $\mu$ Wave Mux                  | 10-785B-522   | Pickering     | 22/24/27, 15C, 15B |
| 14021  | Relay Dual 6 Chnl $\mu$ Wave Mux               | 10-785-522    |               | 22/24/27, 15C, 15B |
|        | Relay Dual 6 Chnl $\mu$ Wave Mux               | 10-785-522    |               | 22/24/27, 15C, 15B |
| 17644  | Dual 6 Channel MUX Microwave Relay SMA 50 Ohm  | 10-785-522    | Pickering     | 22/24/27, 15C, 15B |
| 16948  | Dual 6 Channel MUX Microwave Relay SMA 50 Ohm  | 10-785-522    | Pickering     | 22/24/27, 15C, 15B |
| 16949  | Dual 6 Channel MUX Microwave Relay SMA 50 Ohm  | 10-785-522    | Pickering     | 22/24/27, 15C, 15B |
| 18792  | Multi Device Controller                        | 2090          | ETS-EMCO      | 22/24/27, 15C, 15B |
| 14963  | RF Preamplifier 100MHz-4GHz (Metal Chassis)    | AFS3-00100400 | Miteq/NMP Cph | 22/24/27, 15C, 15B |
| 18861  | EMI Test Receiver 20Hz-26,5GHz                 | ESI           | Rohde&Schwarz | 22/24/27, 15C, 15B |
| 20335  | Ultra Broadband Antenna Ultralog 30-3000MHz    | HL562         | Rohde&Schwarz | 22/24/27, 15C, 15B |
| 18773  | Shielded Chamber                               | RFD-100       | ETS-Lindgren  | 22/24/27, 15C, 15B |
| 18774  | Shielded Chamber                               | RFSD-F/A-100  | ETS-Lindgren  | 22/24/27, 15C, 15B |
| 19151  | High Pass Filter 3GHz                          | WHJS3000-10SS | Wainwright    | 22/24/27, 15C, 15B |

| Eq. No | Equipment                                   | Type                            | Manufacturer           | Used in            |
|--------|---------------------------------------------|---------------------------------|------------------------|--------------------|
|        | WHK3.0/18G-10ss                             |                                 |                        |                    |
| 13937  | Ultra Stable Notch Filter 850MHz            | WRCA902.4-0.2/40-6SS            | Wainwright Instruments | 22/24/27, 15C, 15B |
| 13936  | Ultra Stable Notch Filter 1747,5MHz         | WRCD1747.5-0.2/40-10SS          | Wainwright Instruments | 22/24/27, 15C, 15B |
| 14114  | Highpass filter                             | WHK1000-12SS                    | Wainwright Instruments | 22/24/27, 15C, 15B |
| 14188  | Ultra Stable Notch Filter 902,4MHz          | WRCA902.4-0.2/40-6SS            | Wainwright             | 22/24/27, 15C, 15B |
| 14187  | Ultra Stable Notch Filter 1747,5MHz         | WRCD1747.5-0.2/40-10SS          | Wainwright             | 22/24/27, 15C, 15B |
| 16633  | Ultra Stable Notch Filter 1880,0MHz         | WRCD1880.0-0.2/40-10SS          | Wainwright             | 22/24/27, 15C, 15B |
| 19587  | BT/WLAN Band Reject Filter                  | WRCG2400/2483-2390/2493-35/10SS | Wainwright             | 22/24/27, 15C, 15B |
| 20115  | WDCMA Band 2 filter                         |                                 | Wainwright             | 24, 15C, 15B       |
| 20114  | WDCMA Band 4 filter                         | WRCG1737/1743-1733/1747-40/6SS  | Wainwright             | 27, 15C, 15B       |
| 20116  | WDCMA Band 5&6 filter                       | WRCG832/83/-825/845-40/5SS      | Wainwright             | 22, 15C, 15B       |
| 18323  | Band reject filter 1947-1953MHz 40dB        | WRCG1947/1953-1940/1960-40/6SS  | Wainwright             | 22/24/27, 15C, 15B |
| 20031  | Double Ridged Broadband Horn                | BBHA 9120 D                     | SCHWARZBECK            | 22/24/27, 15C, 15B |
| 19966  | Magnetic Loop Antenna 9 kHz - 30 MHz        | HFH2-Z2                         | Rohde&Schwarz          | 15C, 15B           |
| 14993  | EMI Test Receiver 9KHz-2750MHz              | ESCS30                          | Rohde&Schwarz          | 22/24/27, 15C, 15B |
| 15191  | Turntable Contoller Unit                    | G-800SDX                        | YAESU                  | 22/24/27, 15C, 15B |
| 14900  | Antenna Controller                          | HD100                           | HD GmbH                | 22/24/27, 15C, 15B |
| 19374  | Resonant Dipole Antenna 850MHz SMA m Conn.  | -----                           | NMP Cph                | 22/24/27, 15C, 15B |
| 19375  | Resonant Dipole Antenna 1900MHz SMA m Conn. | -----                           | NMP Cph                | 22/24/27, 15C, 15B |
| 20168  | Bluetooth EDR Tester                        | CBT                             | Rohde&Schwarz          | 22/24/27, 15C, 15B |