

## FCC Part 15C Compliance Test Report

|                                                         |                                                                                                                                                                                                                                                                                                                                      |                                   |                                                                                                                                            |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test Report no.:</b>                                 | Salo_FCC_0848_07.doc                                                                                                                                                                                                                                                                                                                 | <b>Date of Report:</b>            | 03-Dec-2008                                                                                                                                |
| <b>Number of pages:</b>                                 | 9                                                                                                                                                                                                                                                                                                                                    | <b>Customer's Contact person:</b> | Sonja Länkinen                                                                                                                             |
| <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>P.O. Box 50<br>Elektroniikkatie 10<br>FIN-90571 OULU, FINLAND<br>Tel. +358 (0) 7180 08000<br>Fax. +358 (0) 7180 47222 |
| <b>FCC listing no.:</b>                                 | 99059                                                                                                                                                                                                                                                                                                                                |                                   |                                                                                                                                            |
| <b>IC recognition no.:</b>                              | 661AD-1                                                                                                                                                                                                                                                                                                                              |                                   |                                                                                                                                            |
| <b>Tested devices/ accessories:</b>                     | <b>Phone; RM-428, Battery; BL-5J</b>                                                                                                                                                                                                                                                                                                 |                                   |                                                                                                                                            |
| <b>FCC ID:</b>                                          | LJPRM-428                                                                                                                                                                                                                                                                                                                            | <b>IC:</b>                        | 661E-RM428                                                                                                                                 |
| <b>Supplement reports:</b>                              |                                                                                                                                                                                                                                                                                                                                      |                                   |                                                                                                                                            |
| <b>Testing has been carried out in accordance with:</b> | CFR 47, FCC rules Part 15 Subpart C, ANSI C63.4 (2003), Public Notice DA 00-705, DTS procedures KDB 558074, IC standards RSS-GEN (Issue 2, June 2007) and RSS-210 (Issue 7, June 2007). Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit". |                                   |                                                                                                                                            |
| <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>             |                                                                                                                                                                                                                                                                                                                                      |                                   |                                                                                                                                            |

**Sami Lehtonen, Test System Manager**

## 1. Summary for FCC Part 15C Compliance Test Report

|                               |                                                         |
|-------------------------------|---------------------------------------------------------|
| Date of receipt               | 07-Apr-2008                                             |
| Testing completed             | 23-May-2008                                             |
| The customer's contact person | Sonja Länkinen                                          |
| Test Plan referred to         | T:\Projects\RM-356\TestPlan_RS\RS_Testplan_RM-356.xls   |
| Notes                         | None                                                    |
| Document name                 | T:\Projects\RM-428\EMC\Results\FCC\Salo_FCC_0848_07.doc |

### 1.1. EUT and Accessory Information

The EUT is a 6-band (GSM850/900/1800/1900 and WCDMA Band I/VIII) mobile phone with GPRS, EGPRS, Bluetooth and WLAN. Bluetooth and WLAN are tested with maximum rated TX power.

| Product | Type   | SN                          | HW   | MV | SW      | DUT   |
|---------|--------|-----------------------------|------|----|---------|-------|
| Phone   | RM-356 | 004401/10/048450/6          | 0502 | -  | 01.10.1 | 26113 |
| Battery | BL-5J  | 4181577436110500004;0670573 | -    | -  | -       | 26110 |

### 1.2. Summary of Test Results

#### WLAN:

| Section in CFR 47 | Section in RSS-GEN or RSS-210 | Name of the test                     | Result |
|-------------------|-------------------------------|--------------------------------------|--------|
| 15.247(b)(1)      | A8.4 (4)                      | Conducted peak output power          | NP     |
| 15.247(d)         | A8.5                          | Band edge compliance of RF emissions | Passed |
| 15.247(d)         | A8.5                          | Spurious RF conducted emissions      | NP     |
| 15.247(d), 15.209 | A8.5                          | Spurious radiated emissions          | NP     |
| 15.207            | 7.2.2                         | AC powerline conducted emissions     | NP     |
| 15.247(a)(2)      | A8.2 (1)                      | 6 dB bandwidth                       | NP     |
| 15.247(e)         | A8.2 (2)                      | Power spectral density               | NP     |

PASSED

The EUT complies with the essential requirements in the standard.

FAILED

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

NP

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

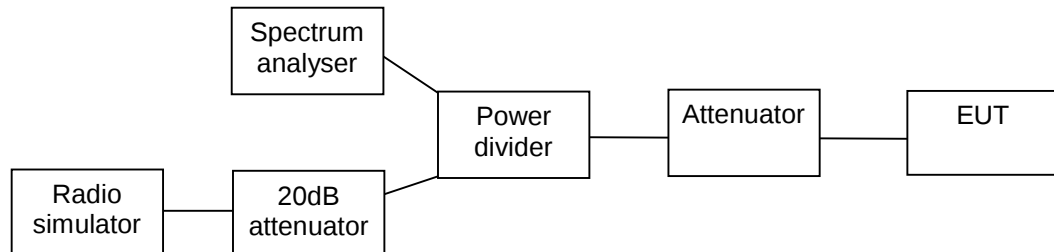
*The test results of LJPRM-356 are re-used for certification of the LJPRM-428. The table above indicates the results, which will be re-used.*

## CONTENTS

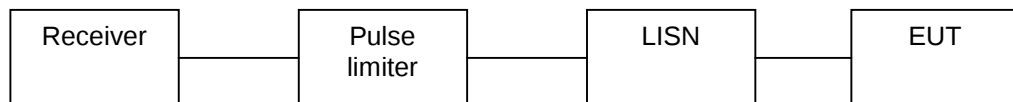
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|------------------------------------------------------------------------------------|----------|
| <b>1. Summary for FCC Part 15C Compliance Test Report.....</b>                     | <b>2</b> |
| 1.1. EUT and Accessory Information .....                                           | 2        |
| 1.2. Summary of Test Results .....                                                 | 2        |
| <b>2. Test setups.....</b>                                                         | <b>4</b> |
| 2.1. Conducted RF test setup .....                                                 | 4        |
| 2.2. AC powerline conducted emissions test setup.....                              | 4        |
| 2.3. Radiated test setup .....                                                     | 4        |
| <b>3. Band edge compliance of RF emissions (FCC §15.247(d), RSS-210 A8.5).....</b> | <b>5</b> |
| 3.1. Test method and limit .....                                                   | 5        |
| 3.2. WLAN Test results .....                                                       | 6        |
| <b>4. Test Equipment.....</b>                                                      | <b>8</b> |
| 4.1. Conducted measurements .....                                                  | 8        |
| 4.2. Radiated measurements .....                                                   | 8        |

## 2. Test setups

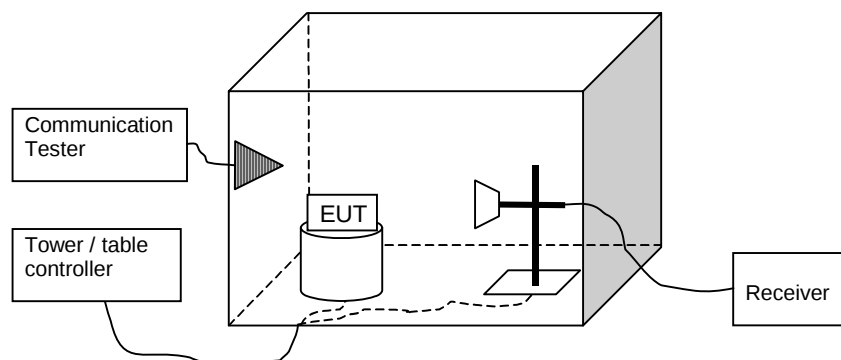
### 2.1. Conducted RF test setup



### 2.2. AC powerline conducted emissions test setup



### 2.3. Radiated test setup



### 3. Band edge compliance of RF emissions (FCC §15.247(d), RSS-210 A8.5)

|                                                        |                     |
|--------------------------------------------------------|---------------------|
| <b>EUT with DUT number</b>                             | RM356 DUT 26113     |
| <b>Accessories with DUT numbers</b>                    | BL-5J DUT 26110     |
| <b>Operation Voltage [V] / [Hz]</b>                    | -                   |
| <b>Result</b>                                          | Passed              |
| <b>Remarks</b>                                         | None                |
| <b>Temp [°C] / Humidity [%RH] / Air Pressure [kPa]</b> | 23.0 / 38.5 / 101.4 |
| <b>Date of measurements</b>                            | 23-May-2008         |
| <b>Measured by</b>                                     | Christian Andersen  |

#### 3.1. Test method and limit

The measurement is made according to DTS procedures KDB 558074 and IC standard RSS-210.

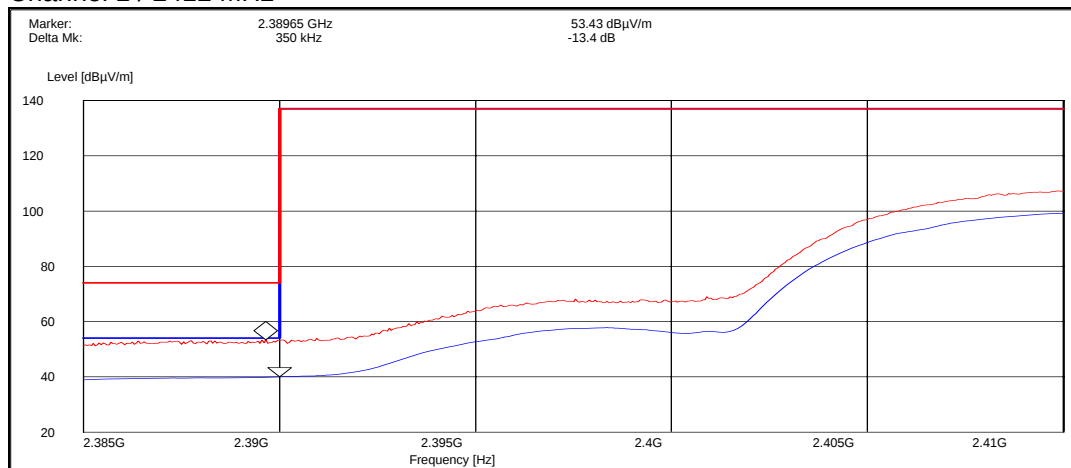
Limits for band edge compliance of RF emissions measurements (3 m measurement distance)

| <b>Frequency range [MHz]</b> | <b>Limit Average [dBμV/m]</b> | <b>Limit Peak [dBμV/m]</b> |
|------------------------------|-------------------------------|----------------------------|
| Below 2390 and above 2483.5  | ≤ 54                          | ≤ 74                       |

## 3.2. WLAN Test results

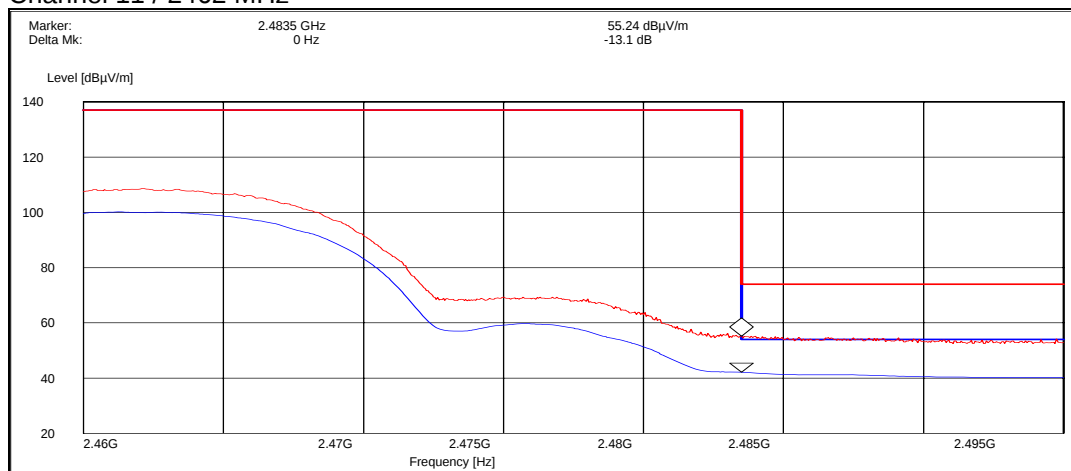
### 3.2.1 DSSS mode, QPSK modulation, 11 Mbps data rate

Channel 1 / 2412 MHz



| Detector (RBW: 1 MHz) | E [dBμV/m] | Result |
|-----------------------|------------|--------|
| Peak                  | 53.40      | Passed |
| Average               | 40.00      | Passed |

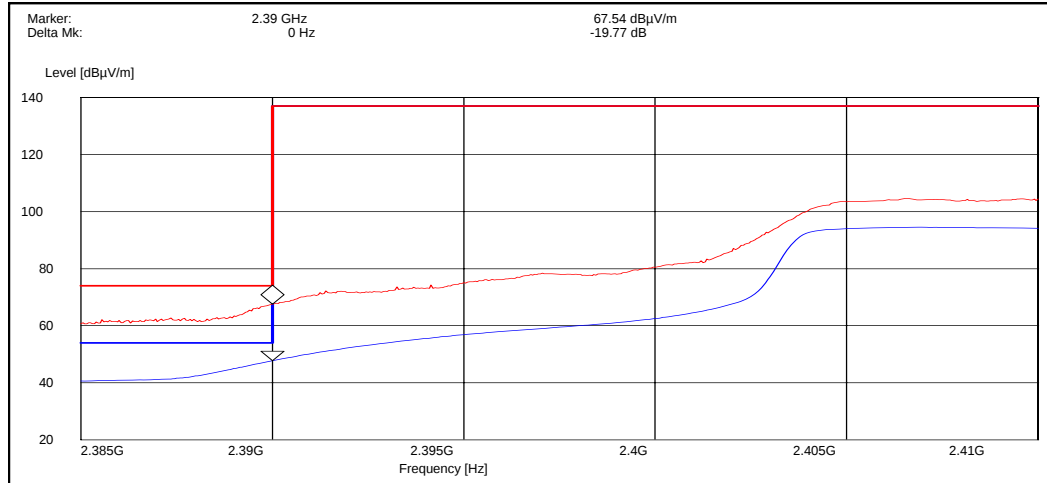
Channel 11 / 2462 MHz



| Detector (RBW: 1 MHz) | E [dBμV/m] | Result |
|-----------------------|------------|--------|
| Peak                  | 55.20      | Passed |
| Average               | 42.10      | Passed |

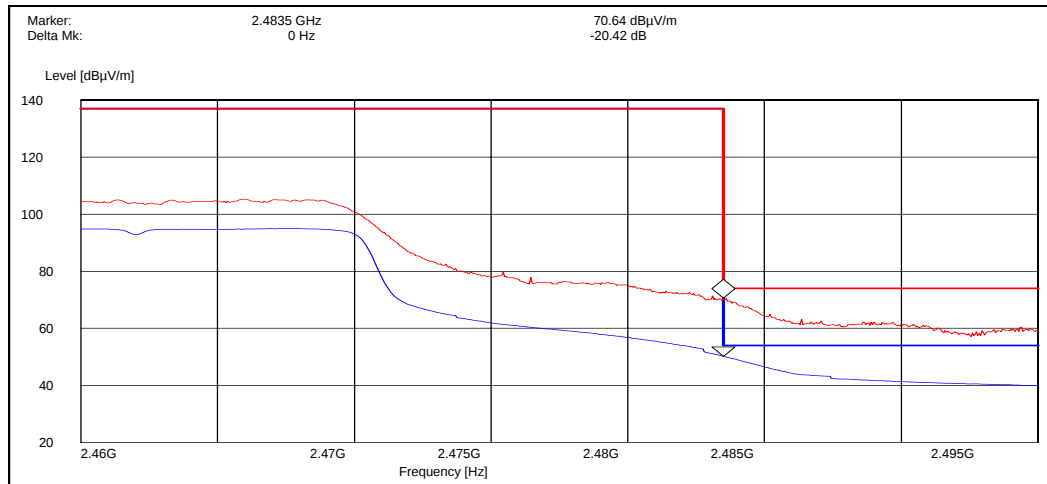
### 3.2.2 OFDM mode, BPSK modulation, 6 Mbps data rate

Channel 1 / 2412 MHz



| Detector (RBW: 1 MHz) | E [dBμV/m] | Result |
|-----------------------|------------|--------|
| Peak                  | 67.54      | Passed |
| Average               | 47.76      | Passed |

Channel 11 / 2462 MHz



| Detector (RBW: 1 MHz) | E [dBμV/m] | Result |
|-----------------------|------------|--------|
| Peak                  | 70.64      | Passed |
| Average               | 50.21      | Passed |

## 4. Test Equipment

### 4.1. 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 |

### 4.2. 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 |

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