

## FCC Part 22/24 Compliance Test Report

|                                                                 |                                                                                                                                                                                                                                                                                                                       |                                   |                                                                                                                       |
|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>Test Report no.:</b>                                         | FCC22&24_RM-662_02                                                                                                                                                                                                                                                                                                    | <b>Date of Report:</b>            | 09-Aug-2010                                                                                                           |
| <b>Number of pages:</b>                                         | 10                                                                                                                                                                                                                                                                                                                    | <b>Customer's Contact person:</b> | Vivian Kill-Tollnek                                                                                                   |
| <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>Lise Meitner Strasse 10<br>89081 ULM<br>GERMANY<br>Tel. +49 731 1754 0<br>Fax. +49 731 1754 6800 |
| <b>FCC listing no.:</b>                                         | 99059                                                                                                                                                                                                                                                                                                                 |                                   |                                                                                                                       |
| <b>IC recognition no.:</b>                                      | 661AL-1                                                                                                                                                                                                                                                                                                               |                                   |                                                                                                                       |
| <b>Tested devices/<br/>accessories:</b>                         | <b>Phone RM-662 / Battery BL-5CT / Charger AC-8 / Headset WH-102</b>                                                                                                                                                                                                                                                  |                                   |                                                                                                                       |
| <b>FCC ID:</b>                                                  | PPIRM-662                                                                                                                                                                                                                                                                                                             | <b>IC:</b>                        | 661U-RM662                                                                                                            |
| <b>Supplement reports:</b>                                      |                                                                                                                                                                                                                                                                                                                       |                                   |                                                                                                                       |
| <b>Testing has been<br/>carried out in<br/>accordance with:</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 5, February 2009). 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<br/>for the contents:</b>                 |                                                                                                                                                                                                                                                                                                                       |                                   |                                                                                                                       |

Christian Andersen, System Specialist, EMC

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

|                               |                                                    |
|-------------------------------|----------------------------------------------------|
| Date of receipt               | 03-June-2010                                       |
| Testing completed             | 07-June-2010                                       |
| The customer's contact person | Vivian Kill-Tollnek                                |
| Test Plan referred to         | T:\Projects\RM-640\TestPlan\RS_testplan_RM-640.xls |
| Notes                         | None                                               |
| Document name                 | FCC22&24_RM-640_02.docx                            |

### 1.1. EUT and Accessory Information

The EUT is a 4-band (GSM850/900/1800/1900) mobile phone with GPRS, EGPRS, Bluetooth and WLAN. 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-640 | 004402/13/036920/4          | 0210 | -  | re 5.04 | 24269 |
| Battery | BL-5CT | 3820669492155081047;0670555 | -    | -  | -       | 24263 |
| Charger | AC-8   | 4090499301040501804;0675387 | -    | -  | -       | 24250 |
| Headset | WH-102 | 06943239431A4102160         | -    | -  | -       | 24247 |

### 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     | NP     |

#### 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     | 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 PPIRM-640 are re-used for certification of the PPIRM-662. The table above indicates the results, which will be re-used.

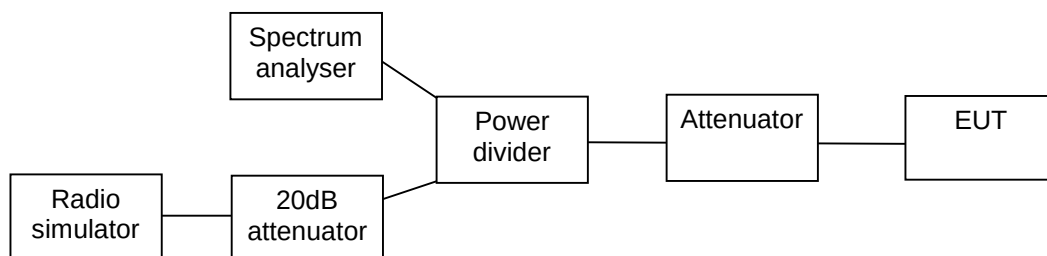
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### 3. 99 % occupied bandwidth (FCC §2.1049(h), RSS-GEN 4.6.1)

|                                                 |                                                  |
|-------------------------------------------------|--------------------------------------------------|
| EUT with DUT number                             | RM-640 DUT 24269                                 |
| Accessories with DUT numbers                    | BL-5CT DUT 24263 AC-8 DUT 24250 WH-102 DUT 24247 |
| Operation Voltage [V] / [Hz]                    | -                                                |
| Result                                          | Passed                                           |
| Remarks                                         | None                                             |
| Temp [°C] / Humidity [%RH] / Air Pressure [kPa] | 24 / 43 /1013                                    |
| Date of measurements                            | 7-June-2010                                      |
| Measured by                                     | Ruben Hansen                                     |

#### 3.1. Test setup



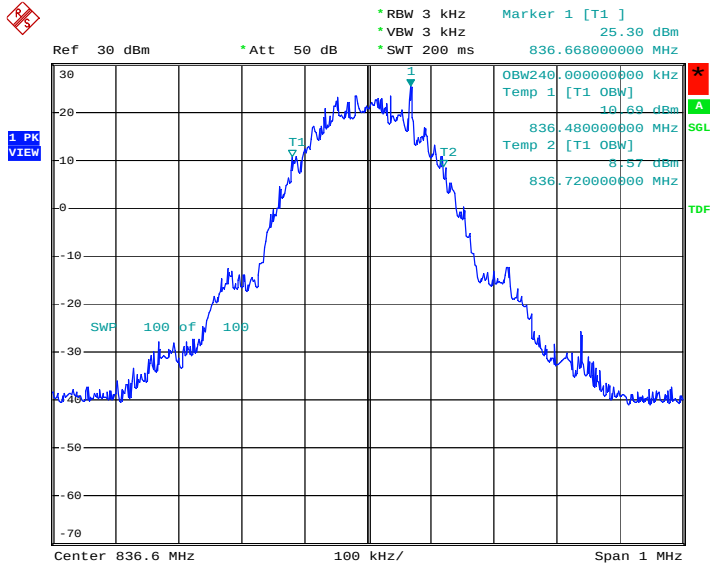
#### 3.2. Test method and limit

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

### 3.3. GSM 850 Test results

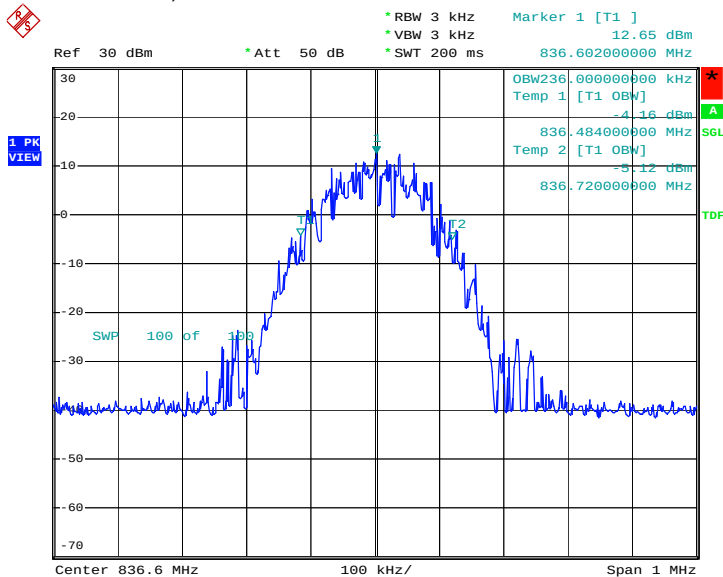
| Operation mode (TX on) | 99% occupied bandwidth [kHz] |
|------------------------|------------------------------|
| GSM                    | 240                          |
| EGPRS                  | 236                          |

GSM mode, channel 190 / 836.6 MHz



Date: 7. JUN. 2010 13:12:31

EGPRS mode, channel 190 / 836.6 MHz

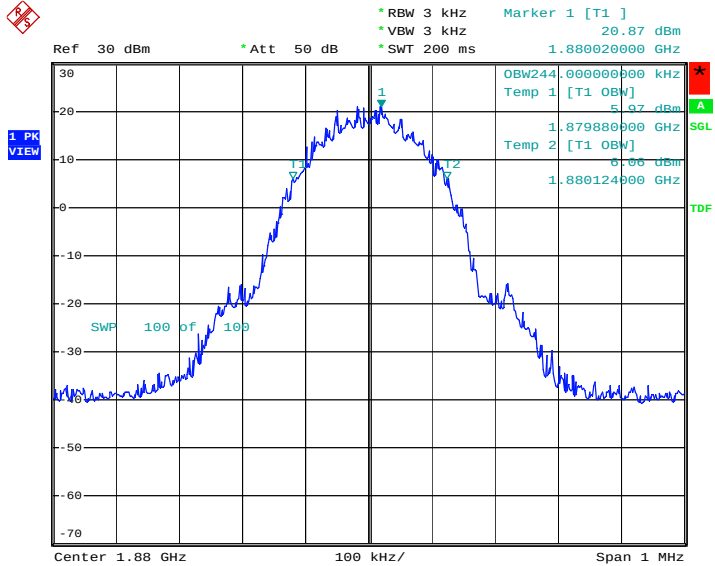


Date: 7. JUN. 2010 13:13:33

### 3.4. GSM 1900 Test results

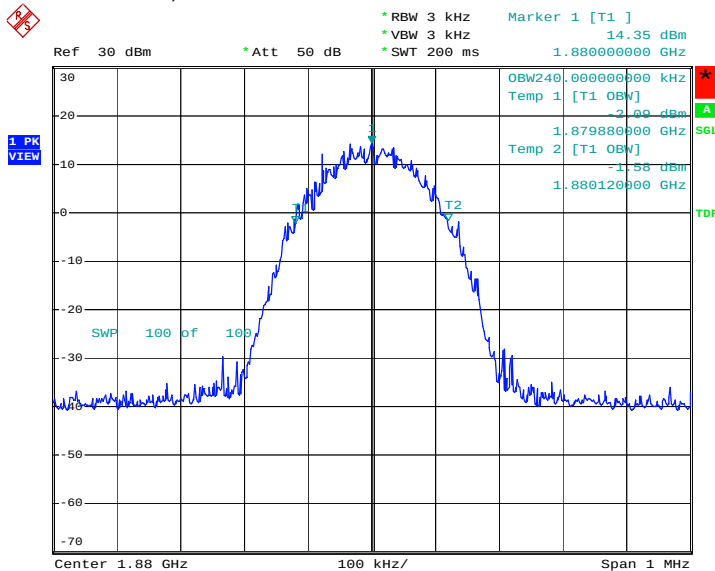
| Operation mode (TX on) | 99% occupied bandwidth [kHz] |
|------------------------|------------------------------|
| GSM                    | 244                          |
| EGPRS                  | 240                          |

GSM mode, channel 661 / 1880.0 MHz



Date: 8.JUN.2010 09:38:46

EGPRS mode, channel 661 / 1880.0 MHz

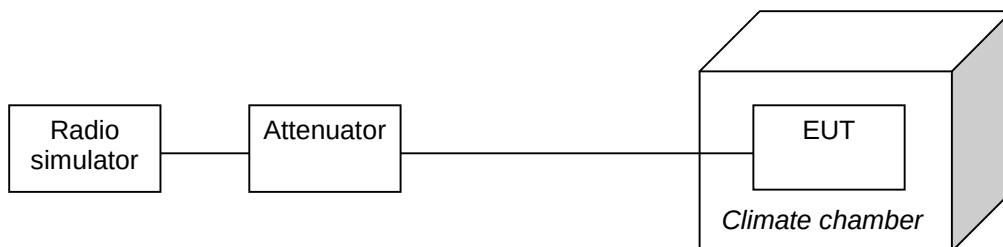


Date: 8.JUN.2010 09:40:35

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

|                                                 |                                                  |
|-------------------------------------------------|--------------------------------------------------|
| EUT with DUT number                             | RM-640 DUT 24269                                 |
| Accessories with DUT numbers                    | BL-5CT DUT 24263 AC-8 DUT 24250 WH-102 DUT 24247 |
| Operation Voltage [V] / [Hz]                    | -                                                |
| Result                                          | Passed                                           |
| Remarks                                         | None                                             |
| Temp [°C] / Humidity [%RH] / Air Pressure [kPa] | 24 / 43 / 1013                                   |
| Date of measurements                            | 7-June-2010                                      |
| Measured by                                     | Ruben Hansen                                     |

##### 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 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

| Frequency deviation [ppm] |
|---------------------------|
| ± 2.5                     |

#### 4.3. GSM 850 Test results

GSM mode, channel 190 / 836.6 MHz

| Temperature [°C] | Deviation [Hz] | Deviation [ppm] |
|------------------|----------------|-----------------|
| 50               | -18            | -0.0215         |
| 40               | 31             | 0.0371          |
| 30               | -19            | -0.0227         |
| 20               | 31             | 0.0371          |
| 10               | -15            | -0.0179         |
| 0                | -11            | -0.0131         |
| -10              | -14            | -0.0167         |
| -20              | 0              | 0.0000          |

#### 4.4. GSM 1900 Test results

GSM mode, channel 661 / 1880.0 MHz

| Temperature [°C] | Deviation [Hz] | Deviation [ppm] |
|------------------|----------------|-----------------|
| 50               | -22            | -0.0117         |
| 40               | -40            | -0.0213         |
| 30               | -37            | -0.0197         |
| 20               | 27             | 0.0144          |
| 10               | 60             | 0.0319          |
| 0                | 71             | 0.0378          |
| -10              | 47             | 0.0250          |
| -20              | 31             | 0.0165          |
| -30              | 27             | 0.0144          |



## 5. Test Equipment

### 5.1. Conducted measurements

| Eq. No | Equipment                                      | Type         | Manufacturer    | Used in            |
|--------|------------------------------------------------|--------------|-----------------|--------------------|
| 20168  | Bluetooth Tester                               | CBT          | Rohde&Schwarz   | 22/24/27, 15C, 15B |
| 18772  | Shielded Chamber                               | RFD-100      | ETS-Lindgren    | 15C, 15B           |
| 13037  | Power Supply 0-15V 10A                         | EA3012       | LP Instruments  | 15C, 15B           |
| 13513  | Pulse Limiter                                  | ESH3Z2       | Rohde&Schwarz   | 15C, 15B           |
| 13666  | Receiver                                       | ESPC         | Rohde&Schwarz   | 15C, 15B           |
| 13935  | LISN                                           | 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  | Communication Tester                           | CMU200       | Rohde&Schwarz   | 15C, 15B           |
| 11386  | DC Power Supply                                | HP6632A      | Hewlett Packard | 22/24/27, 15C, 15B |
| 19678  | Spectrum Analyzer                              | FSP          | Rohde&Schwarz   | 22/24/27, 15C, 15B |
| 16601  | Communication Tester                           | CMU200       | Rohde&Schwarz   | 22/24/27, 15C, 15B |
| 19625  | Climatic Chamber                               | VT4002EMC    | Vötsch          | 22/24/27, 15C, 15B |
| 13357  | Signal Generator                               | SMP02        | Rohde&Schwarz   | 22/24/27, 15C, 15B |
| 19116  | Power splitter                                 | -            | various         | 22/24/27, 15C, 15B |
| 20544  | Transformer. 230/115V                          | -            | Nokia           | 22/24/27, 15C, 15B |
| 20543  | UPS. 700V/A 490W                               | PW 9120 700i | Powerware       | 22/24/27, 15C, 15B |

### 5.2. Radiated measurements

| Eq. No | Equipment                                     | Type                               | Manufacturer           | Used in            |
|--------|-----------------------------------------------|------------------------------------|------------------------|--------------------|
| 18792  | Mast/turntable controller                     | 2090                               | ETS-EMCO               | 22/24/27, 15C, 15B |
| 18416  | Communication Tester                          | CMU200                             | Rohde&Schwarz          | 22/24/27, 15C, 15B |
| 20168  | Bluetooth Tester                              | CBT                                | Rohde&Schwarz          | 22/24/27, 15C, 15B |
| 13077  | Power Supply                                  | EA-3016                            | -                      | 22/24/27, 15C, 15B |
| 15742  | Programmable Relay Switching System           | -----                              | 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 |
| 18861  | Receiver                                      | EMI Test Receiver 20Hz-26,5GHz ESI | Rohde&Schwarz          | 22/24/27, 15C, 15B |
| 18860  | Antenna                                       | HL562                              | Rohde&Schwarz          | 22/24/27, 15C, 15B |
| 18773  | Anechoic chamber                              | RFD-100                            | ETS-Lindgren           | 22/24/27, 15C, 15B |
| 18774  | Anechoic chamber                              | RFSD-F/A-100                       | ETS-Lindgren           | 22/24/27, 15C, 15B |
| 19151  | High Pass Filter                              | WHJS3000-10SS                      | Wainwright             | 22/24/27, 15C, 15B |
| 13937  | Band reject filter                            | WRCA902.4-0.2/40-6SS               | Wainwright Instruments | 22/24/27, 15C, 15B |
| 13936  | Band reject filter                            | 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  | Band reject filter                            | WRCA902.4-0.2/40-6SS               | Wainwright             | 22/24/27, 15C, 15B |
| 14187  | Band reject filter                            | WRCD1747.5-0.2/40-10SS             | Wainwright             | 22/24/27, 15C, 15B |

| Eq. No | Equipment                | Type                            | Manufacturer  | Used in            |
|--------|--------------------------|---------------------------------|---------------|--------------------|
| 16633  | Band reject filter       | WRCD1880.0-0.2/40-10SS          | Wainwright    | 22/24/27, 15C, 15B |
| 19587  | Band reject filter       | WRCG2400/2483-2390/2493-35/10SS | Wainwright    | 22/24/27, 15C, 15B |
| 20115  | Band reject filter       | -                               | Wainwright    | 22/24/27, 15C, 15B |
| 20114  | Band reject filter       | WRCG1737/1743-1733/1747-40/6SS  | Wainwright    | 22/24/27, 15C, 15B |
| 20116  | Band reject filter       | WRCG832/83/-825/845-40/5SS      | Wainwright    | 22/24/27, 15C, 15B |
| 20698  | Antenna                  | BBHA 9120 D                     | SCHWARZBECK   | 22/24/27, 15C, 15B |
| 19966  | Antenna                  | HFH2-Z2                         | Rohde&Schwarz | 15C, 15B           |
| 13799  | Signal Generator         | SMP02                           | 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 |
| 20544  | Transformer. 230/115V    | -                               | Nokia         | 22/24/27, 15C, 15B |
| 20543  | UPS. 700V/A 490W         | PW 9120 700i                    | Powerware     | 22/24/27, 15C, 15B |