Recognized by the
Federal Communications Commission
**Anechoic chamber registration no.: 90462 (FCC)**
**Anechoic chamber registration no.: 3463 (IC)**
TCB ID: DE 0001

Accredited by the
German Accreditation Council
DAR–Registration Number
TTI–P–G 081/94-D0

Independent ETSI
compliance test house

# Accredited Bluetooth® Test Facility (BQTF)

| | |
|---|---|
| **Annex to Test report no. :** | **2-3949-01-02/05** |
| **Applicant :** | **Sony Ericsson Mobile Communications AB** |
| **Type :** | **AAA-1041021-BV** |
| **Test Standard :** | **FCC Part 15 / RSS210** |
| **FCC ID :** | **PY7A1041021** |
| **Certification No. IC :** | **4170B-A1041021** |

# Table of contents

**1 GENERAL INFORMATION ..... 3**

1.1. ADMINISTRATIVE DATA OF THE TEST FACILITY ..... 3

*1.1.1 Identification of the testing laboratory ..... 3*

1.2. NOTES ..... 3

1.3 DETAILS OF APPLICANT ..... 4

1.4 APPLICATION DETAILS ..... 4

1.5 TEST ITEM ..... 5

1.6 TEST SETUP ..... 6

1.7 TEST SPECIFICATIONS ..... 6

**2 STATEMENT OF COMPLIANCE ..... 7**

2.1 SUMMARY OF MEASUREMENT RESULTS ..... 7

*2.1.1 CFR 47 Part 15 Radio frequency devices ..... 7*

**3 MEASUREMENTS AND RESULTS ..... 8**

**4 ANNEX A: FCC PART 15 SUBPART B ..... 9**

*4.1 Conducted Limits ..... 9*

**5 ANNEX B PHOTOGRAPS OF TEST SITE ..... 16**

**6 ANNEX C: EXTERNAL PHOTOGRAPS OF THE EQUIPMENT ..... 21**

**7 ANNEX D: INTERNAL PHOTOGRAPS OF THE EQUIPMENT ..... 23**

# 1 General information

## 1.1. Administrative data of the test facility

### 1.1.1 Identification of the testing laboratory

| | |
|---|---|
| Company name: | Cetecom ICT Services GmbH |
| Address: | Untertürkheimerstr. 6-10<br>D-66117 Saarbruecken<br>Germany |
| Laboratory accreditation: | DAR-Registration No. TTI-P-G081/94-D0<br>Bluetooth Qualification Test Facility (BQTF)<br>Federal Communications Commission (FCC)<br>Identification/Registration No : 90462 |
| Responsible for testing laboratory: | Gillmann D. / Hausknecht D.<br>Phone: +49 681 598 0<br>Fax: +49 681 598 9075<br>email: info@ict.cetecom.de |

## 1.2. 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 generalizations 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.

…….... / ……..

Responsible for testing laboratory
(Gillmann D. / Hausknecht D.)

…….... / ……..

Responsible for test report
(Gillmann D. / Hausknecht D.)

## 1.3 Details of Applicant

| | | |
|---|---|---|
| Name | : | Sony Ericsson Mobile Communications AB |
| Address | : | Nya Vattentornet |
| City | : | 22188 Lund |
| Country | : | Sweden |
| Phone | : | + 46 46 193242 |
| Fax | : | + 46 46 193295 |
| Contact | : | Mr. Bo. Johansson |
| Phone | : | + 46 46 193242 |
| Fax | : | + 46 46 193295 |
| e-mail | : | bo.g.johansson@sonyericsson.com |

## 1.4 Application Details

| | | |
|---|---|---|
| Date of receipt of application | : | 2005-05-19 |
| Date of receipt of test item | : | 2005-05-27 |
| Date(s) of test | : | 2005-05-30 to 2005-06-01 |
| Date of report | : | 2005-06-01 |

## 1.5 Test Item

| | | |
|---|---|---|
| Type of equipment | : | GSM850/1900 mobile phone GPRS class 10 |
| Type name | : | AAA-1041021-BV |
| Manufacturer | : | Sony Ericsson Mobile Communications AB |
| Address | : | Nya Vattentornet |
| City | : | 22188 Lund |
| Country | : | Sweden |
| | | |
| Frequency | : | 1850.2 – 1909.8 MHz and 824.2 – 848.8 MHz |
| Type of modulation | : | 300KGXW / 200KQ7W |
| Number of channels | : | 300 (PCS1900) and 125 (PCS850) |
| Antenna | : | Integral antenna |
| Power supply (normal) | : | 3.9V DC |
| | | |
| FCC ID | : | PY7A1041021 |
| Certification No. IC | : | 4170B-A1041021 |
| Open Area Test Site IC No. | : | 3436 |
| IC Standards | : | RSS210, Issue 4 |

**ATTESTATION:**
**DECLARATION OF COMPLIANCE:** I declare that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

**Laboratory Manager :**

| Date | Section | Name | Signature |
|---|---|---|---|
| 2005-06-01 | RSC 8431 | Gillmann | |

## 1.6 Test Setup

Hardware : 4051
Software : R2AL026

Mobile; (cond. measurements) : 35619400-002173-4-17
Mobile; (rad. measurements) : 35619400-002152-8-17

## 1.7 Test Specifications

| | |
|---|---|
| **FCC:** | **CFR Part 15** |
| **IC:** | **RSS 210, Issue 4** |

# 2 Statement of Compliance

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

## 2.1 Summary of Measurement Results

### 2.1.1 CFR 47 Part 15 Radio frequency devices

| Section in this Report | Test Name | Verdict |
|---|---|---|
| 4.1 | Conducted limits | pass |
| 4.2 | Radiated emission limits | Pass - see test report no. 2-3949-01-02/05 |
| 4.3 | | |
| 4.4 | | |
| 4.5 | | |
| 4.6 | | |
| 4.7 | | |

## 3 Measurements and 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 C63.2-1996 clause 15 and ANSI C63.4-2003 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 C63.4-2003 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 15.109 and 15.107

# 4 Annex A: FCC Part 15 Subpart B

## 4.1 Conducted Limits

**Reference**

| | |
|---|---|
| FCC: | CFR Part 15.207, 15.107 |
| IC: | RSS 210, Issue 4, Section 6.6 , 7.4 |

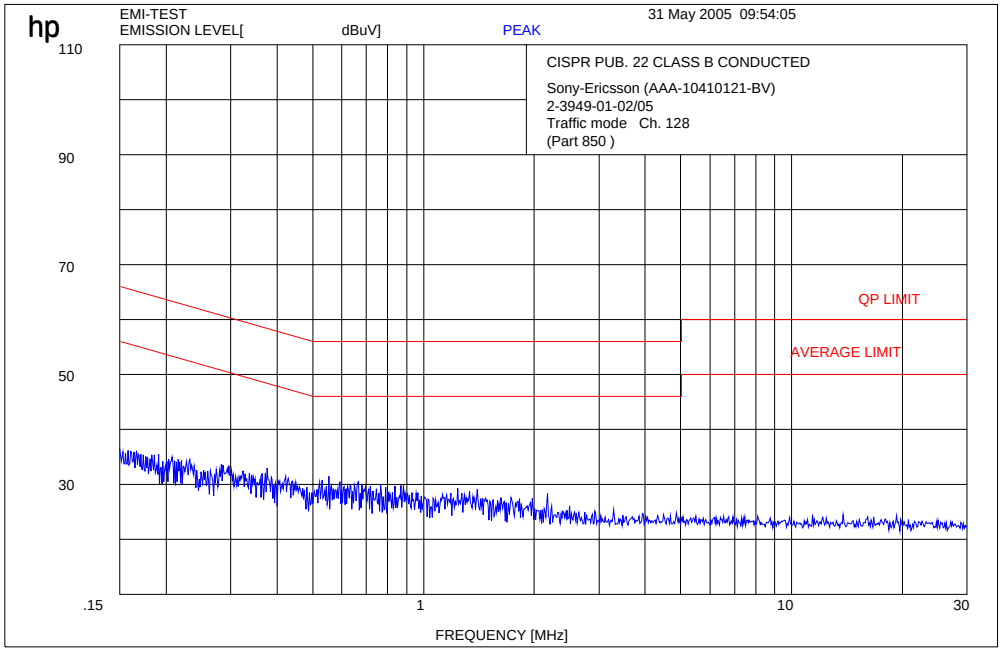
**Limits:** § 15.107 / 15.207

| Frequency of Emission (MHz) | Conducted Limit (dBµV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 – 0.5 | 66 to 56 * | 56 to 46 * |
| 0.5 – 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

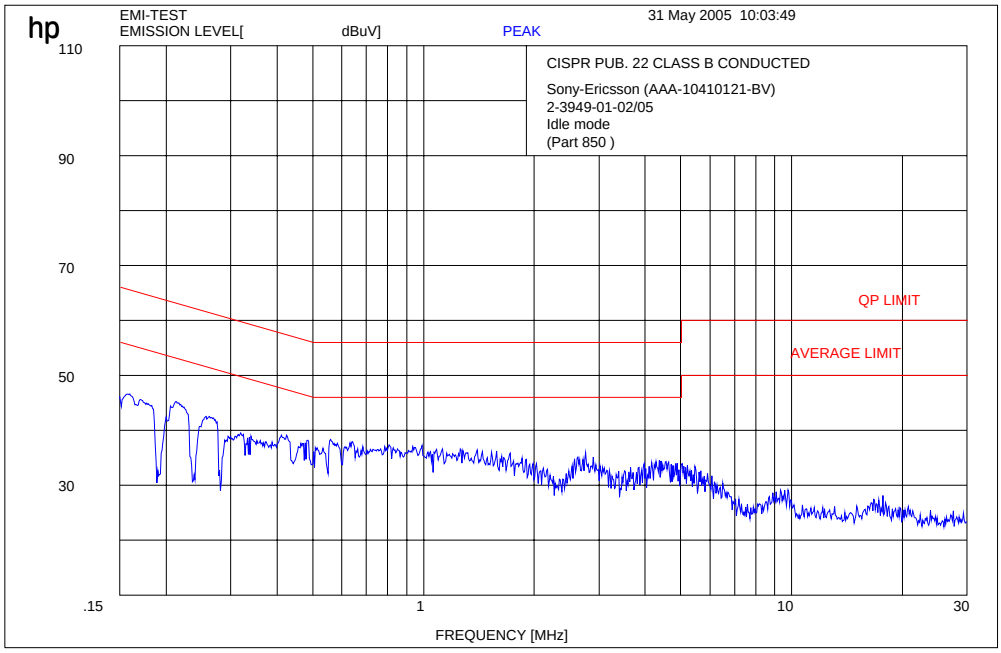
* Decreases with the logarithm of the frequency

## Valid for Part 1900 and Part 850

## Plot No.: 01 Traffic mode

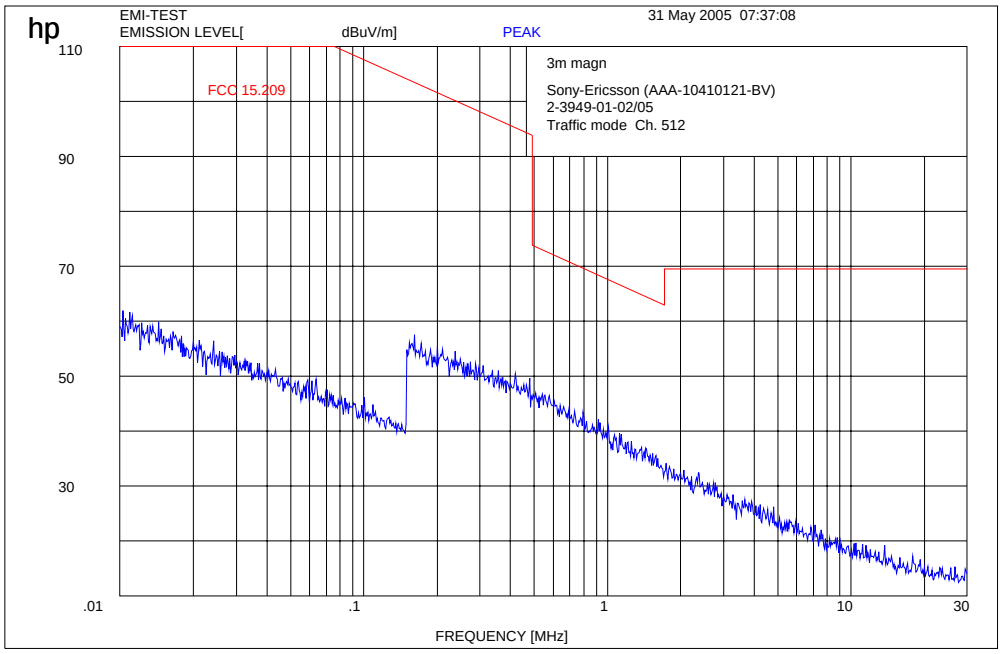



## Plot No.: 02 Idle mode

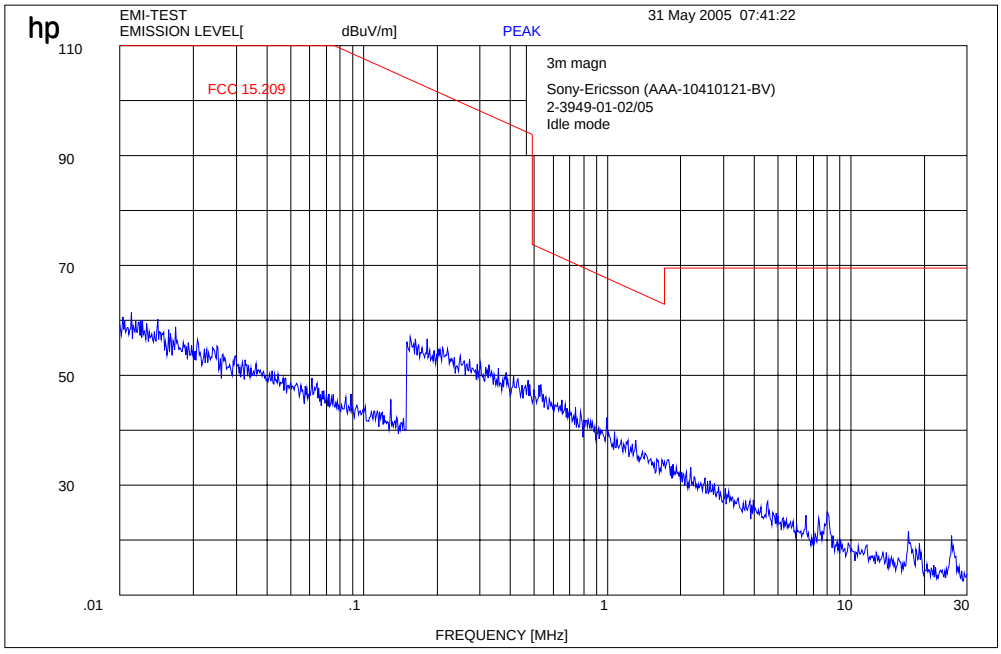


## Valid for Part 1900 and Part 850

## Plot No.: 03 Idle mode (150 kHz – 30 MHz)




## Plot No.: 04 Idle mode (150 kHz – 30 MHz)



## Used Testequipment

| Device | Manufacturer | Type | S/N Number | Inv. No. Cetecom |
|---|---|---|---|---|
| Spektrum Analyser | HP | 8566B | 2747A05306 | 300001000 |
| Spektrum Analyser Display | HP | 85662A | 2816A16541 | 300002297 |
| Quasi-Peak-Adapter | HP | 85650A | 2811A01131 | 300000999 |
| Power Dupply | HP | 6032A | 2818A03450 | 300001040 |
| Power Attenuator | Byrd | 8325 | 1530 | 300001595 |
| Bikonical Antenna | EMCO | 3104 | 3758 | 300001602 |
| Log. Period. Antenna | EMCO | 3146 | 2130 | 300001603 |
| Double Ridged Antenna | EMCO | HP 3115P | 3088 | 300001032 |
| Active Loop Antenna | EMCO | 6502 | 2210 | 300001015 |
| Antenna VDE/FCC | | HP11965B | | 300002298 |
| SRM-Drive | HP | 9144A | 2823e46556 | 300001044 |
| Software | HP | EMI | | 300000983 |
| Busisolator | Kontron | | | 300001056 |
| Absorberhalle | MWB | | 87400/02 | 300000996 |
| Salzsäule | Kontron | | | 300001055 |
| Antenna | R&S | HMO20 | 832211/003 | 300002243 |
| Indukt.Tast Antenna | R&S | HFH 2 Z4 | 881468/026 | 300001464 |
| System-Rack | HP I.V. | 85900 | * | 300000222 |
| Spectrum Analyzer | HP | 8566B | 2747A05275 | 300000219 |
| Quasi-Peak-Adapter | HP | 85650A | 2811A01135 | 300000216 |
| RF-Preselector | HP | 85685A | 2837A00779 | 300000218 |
| Rahmen Antenne | R&S | HFH2-Z2 | 891847-35 | 300001169 |
| Leitungsteiler | HP | 11850C | | 300000997 |
| Breitband-Hornantenne EMI | HP | 35155P | | 300002300 |
| PC | HP | Vectra VL | | 300001688 |
| VHF Meßantenne | Schwarzbeck | VHA 9103 | | 300001778 |
| Spectrum Analyzer Display | HP | 85662A | 2816A16497 | 300001690 |
| VHF Meßantenna | Schwarzbeck | VHA 9103 | | 300001780 |
| Biconical Antenna | EMCO | 3104 C | 9909-4868 | 300002590 |

***SRD Laboratory:***

| *Device* | 300001207 | **Type** | **S/N Number** | **Inv. No. Cetecom** |
|---|---|---|---|---|
| Spectrum Analyzer | 300001208 | 494AP | B010241 | 300000863 |
| Spectrum Analyzer | HP | 71210A (70000) | 2731A02347 | 300000321 |
| Spectrum Analyzer Display | HP | 70206A | 2840A01553 | 300002017 |
| Reference Frequency | HP | 70310A | 2736A00707 | 300002018 |
| Local Oscillator | HP | 70900A | 2842A02221 | 300002019 |
| ZF-Modul 10Hz-300 kHz | HP | 70902A | 2840A02145 | 300002020 |
| ZF-Modul 100 kHz-3 MHz | HP | 70903A | 2835A01069 | 300002021 |
| HF-Teil für 71210A 100Hz- 22GHz | HP | 70908A | | 300002022 |
| Spectrum Analyzer 2 | HP | 85660B | 3138A07614 | |
| Spectrum Analyzer Display 2 | HP | 85662A | 3144A20627 | |

| | | | | |
|---|---|---|---|---|
| Signal Generator DC-600 KHz | HP | 8904A | 2822A01213 | 300001157 |
| Signal Generator DC-600 KHz | HP | 8904A | 2822A01214 | 300001158 |
| Powersupply | HP | 6038A | 3122A11097 | 300001204 |
| Netznachbildung | R&S | ESH3-Z5 | 828576/020 | 300001210 |
| Amplituden Controller | R&S | SMDU-Z2 | 871829/051 | 300002309 |
| Trenntrafo | Erfi | 913501 | | 300001205 |
| Trenntrafo | Grundig | RT5A | 9242 | 300001627 |
| Relais Matrix | HP | 3488A | 2719A15013 | 300001156 |
| Multimeter | Siemens | Multizet | | 300001102 |
| Peak Power Calibrator | HP | 8900B | | 300001084 |
| Schallgeber | Schomandl | SG 1 | 10159 | 300001209 |
| Schallgeber | Schomandl | SG 2 | 10176 | 300002473 |
| Filter | FSY Microwave | | | 300001206 |
| Attenuatorer | Pro Nova | | | 300002476 |
| Klimaschrank | Heraeus Voetsch | VUK04/500 | | 300001012 |
| Spectrum Analyzer 3 | HP | 8566A | 1925A00257 | 300001098 |
| Spectrum Analyzer Display 3 | HP | 85662 | 1925A00860 | 300002306 |
| Oszilloscope | Tektronix | 2432 | 110261 | 300001165 |
| Radiocom. Analyzer | R&S | CMTA 54 | 894043/010 | 300001175 |
| Powersupply | HP | 6038A | 2848A07027 | 300001174 |
| Signal Generator 0.01-1280 MHz | HP | 8662A | 2224A01012 | 300001110 |
| Signal Generator (Funktions) | R&S | AFGU | 862490/032 | 300001201 |
| Trenntrafo | Erfi | MPL | 91350 | 300001155 |
| Relais Matrix | R&S | PSU | 893285/020 | 300001173 |
| Power Meter | HP | 436A | 2101A12378 | 300001136 |
| Powersensor | HP | 8484A | 2237A10156 | 300001140 |
| Powersensor | HP | 8482A | 2237A06016 | 300001139 |
| Relais Matrix | R&S | PSU | 282628/004 | 300001214 |
| Powersupply | Zentro | | 2007 | 300001109 |
| Oszilloscope | Tektronix | 7633 | | 300001111 |
| Klimaschrank | Heraeus Voetsch | VUK04/500 | 32926 | 300001500 |
| Quasi-Peak Adapter | HP | 85650A | 2811A01204 | 300002308 |
| Radiocom. Analyzer | R&S | CMTA 84 | 894199/012 | 300001176 |
| Oszilloscope | HP | 54510A | 3022A02062 | 300001202 |
| Funkmeßplatz | Schomandl | FD1000 | 34982 | 300001115 |
| Signal Generator | R&S | SMPC | 882416/019 | 300001162 |
| Frequency counter | HP | 5340A | 2116A08138 | 300001104 |
| Power Meter | HP | 436A | 2031U01461 | 300001105 |
| Powersensor | HP | 8482A | | 300001106 |
| Powersensor | HP | 8484A | | 300001107 |
| Powersensor | HP | 8485A | | 300001108 |
| Powersupply | HP | 6038A | 2752A04866 | 300001161 |
| Reflectionsmeter | R&S | NAP | 879191 | 300001132 |
| Signal Generator NF | R&S | SPN | 880139/068 | 300001142 |
| Trenntrafo | Erfi | MPL | 91350 | 300001151 |
| Attenuator | JFW | 30 db | 1350h/104 | 300001703 |
| Attenuator | JFW | 10 db | 1350h/103 | 300001704 |
| Attenuator | JFW | 20 db | 1350h/106 | 300001705 |
| Attenuator | JFW | 20 db | 1350h/105 | 300001766 |
| Filter | Spinner | 153755 | | 300001791 |

| | | | | |
|---|---|---|---|---|
| Powersensor | HP | 8484A | 2237A10494 | 300001666 |
| Powersupply | HP | 6038A | 3122A11097 | 300001204 |
| Netznachbildung | R&S | ESH3-Z5 | 828576/020 | 300001210 |
| Amplituden Controller | R&S | SMDU-Z2 | 871829/051 | 300002309 |
| Trenntrafo | Erfi | 913501 | | 300001205 |
| Trenntrafo | Grundig | RT5A | 9242 | 300001627 |
| Relais Matrix | HP | 3488A | 2719A15013 | 300001156 |
| Multimeter | Siemens | Multizet | | 300001102 |
| Peak Power Calibrator | HP | 8900B | | 300001084 |
| Schallgeber | Schomandl | SG 1 | 10159 | 300001209 |
| Schallgeber | Schomandl | SG 2 | 10176 | 300002473 |
| Filter | FSY Microwave | | | 300001206 |
| Attenuatorer | Pro Nova | | | 300002476 |
| Klimaschrank | Heraeus Voetsch | VUK04/500 | | 300001012 |
| Spectrum Analyzer 3 | HP | 8566A | 1925A00257 | 300001098 |
| Spectrum Analyzer Display 3 | HP | 85662 | 1925A00860 | 300002306 |
| Oszilloscope | Tektronix | 2432 | 110261 | 300001165 |
| Radiocom. Analyzer | R&S | CMTA 54 | 894043/010 | 300001175 |
| Powersupply | HP | 6038A | 2848A07027 | 300001174 |
| Signal Generator 0.01-1280 MHz | HP | 8662A | 2224A01012 | 300001110 |
| Signal Generator (Funktions) | R&S | AFGU | 862490/032 | 300001201 |
| Trenntrafo | Erfi | MPL | 91350 | 300001155 |
| Relais Matrix | R&S | PSU | 893285/020 | 300001173 |
| Power Meter | HP | 436A | 2101A12378 | 300001136 |
| Powersensor | HP | 8484A | 2237A10156 | 300001140 |
| Powersensor | HP | 8482A | 2237A06016 | 300001139 |
| Relais Matrix | R&S | PSU | 282628/004 | 300001214 |
| Powersupply | Zentro | | 2007 | 300001109 |
| Oszilloscope | Tektronix | 7633 | | 300001111 |
| Klimaschrank | Heraeus Voetsch | VUK04/500 | 32926 | 300001500 |
| Quasi-Peak Adapter | HP | 85650A | 2811A01204 | 300002308 |
| Radiocom. Analyzer | R&S | CMTA 84 | 894199/012 | 300001176 |
| Oszilloscope | HP | 54510A | 3022A02062 | 300001202 |
| Funkmeßplatz | Schomandl | FD1000 | 34982 | 300001115 |
| Signal Generator | R&S | SMPC | 882416/019 | 300001162 |
| Frequency counter | HP | 5340A | 2116A08138 | 300001104 |
| Power Meter | HP | 436A | 2031U01461 | 300001105 |
| Powersensor | HP | 8482A | | 300001106 |
| Powersensor | HP | 8484A | | 300001107 |
| Powersensor | HP | 8485A | | 300001108 |
| Powersupply | HP | 6038A | 2752A04866 | 300001161 |
| Reflectionsmeter | R&S | NAP | 879191 | 300001132 |
| Signal Generator NF | R&S | SPN | 880139/068 | 300001142 |
| Trenntrafo | Erfi | MPL | 91350 | 300001151 |
| Attenuator | JFW | 30 db | 1350h/104 | 300001703 |
| Attenuator | JFW | 10 db | 1350h/103 | 300001704 |
| Attenuator | JFW | 20 db | 1350h/106 | 300001705 |
| Attenuator | JFW | 20 db | 1350h/105 | 300001766 |
| Filter | Spinner | 153755 | | 300001791 |
| Powersensor | HP | 8484A | 2237A10494 | 300001666 |

| | | | | |
|---|---|---|---|---|
| Powersensor | HP | 8485A | 2238A00849 | 300001668 |
| Bandfilter | Telonic | TTF7255EE | 20293-11 | 300001300 |
| Bandfilter | Telonic | TTF12555EE | 20292-6 | 300001302 |
| Bandfilter | Telonic | TTF25055EE | 20291-8 | 300001304 |
| Bandfilter | Telonic | TTF50055EE | 20290-7 | 300001305 |
| Bandfilter | Telonic | TTF100055EE | 20289-7 | 300001307 |
| Bandfilter | Telonic | TTA300055EESN | 20370-2 | 300001312 |
| Bandstop | Telonic | TTR3753EE1 | 30013-1 | 300001314 |
| Bandstop | Telonic | TTR723EE | 20417-2 | 300001316 |
| Bandstop | Telonic | TTR95-3EE | 20372-4 | 300001318 |
| Bandstop | Telonic | TTR1903EE | 30036-4 | 300001320 |
| Bandstop | Telonic | TTR3753EE | 20369-5 | 300001321 |
| Bandstop | Telonic | TTR750-3EE1 | 90177-1 | 300002387 |
| Highpass | Pro Nova | HDP120-6GG | ohne | 300001348 |
| Highpass | Pro Nova | HMC500-6AA | HJ67-01? | 300001350 |
| Highpass | Narda | NHP 9000 | 0004 | 300001362 |
| Highpass | Narda | HDP16-6GH | JV70-01 | 300001364 |
| Highpass | RSD | HDP50-6GH, HDP200-6GG | | 300001371 |
| Highpass | RSD | 2099-02-01 | | 300000370 |
| Signal Generator 0.1-2060 MHz | HP | 8657A | 2838U00736 | 300001009 |
| Radio Code Analyzer | Schlumberger | SL4922 | | 300001038 |
| Signal Analyzer | B&K | 2033 | | 300001047 |
| Frequency counter | HP | 5386A | 2704A01243 | 300000998 |
| Laufzeitelement | WR-Elektronik | | | 300001036 |
| Powersupply Stromversorgung | Systron | M5P 40/15A | 828233 | 300001291 |
| Powersupply | Heiden | 1108-32 | 1701 | 300001392 |
| Powersupply | Heiden | 1108-32 | 1802 | 300001383 |
| Powersupply | Heiden | 1108-32 | 003202 | 300001187 |
| Powersupply | Zentro | LA 2x30/5GB1 | 2011 | 300001276 |
| Powersupply | Zentro | LA 2x30/5GB2 | 2012 | 300001275 |
| Powersupply | Zentro | LA 30/5GA | 2041,2042 | 300001287 |
| Trenntrafo | Grundig | RT5A | 8781 | 300001277 |
| Trenntrafo | Grundig | RT5A | 9242 | 300001263 |
| Multimeter | Goerz Elektro | Unigor 6e P | 911 355 | 300001625 |
| Multimeter | Goerz Elektro | Unigor 6e P | 911 391 | 300001281 |
| Climatic Box | Heraeus Voetsch | VUK04/500 | 32679 | 300000299 |
| Powersensor + Att. | HP | 8482B | 2703A02586 | 300001492 |
| Attenuator 30 dB | HP | 8498A | 1801A02445 | 300001475 |
| Signal Generator NF | HP | | 2822A01203 | 300001004 |
| Attenuator | Spinner | BN 534171 D | 51881 | 300001516 |
| Attenuator coaxial | Bird | 8325 | 2429 | 300001513 |
| Impulsbegrenzer | R&S | ESH 3 Z2 | | 300001460 |
| 4Port Box | R&S | 4Port Box | 860457/005 | 300001472 |
| Signal Generator 0.1-4200 MHz | HP | 8665A | 2833A0011 | 300002299 |
| NF-Spektrumanalyzer | B&K | 2033A | | 300002301 |
| Swissphone Freifeld-Messbox | Swissphone Schweiz | | | 300002302 |
| Trenntrafo regelbar | Grundig | RT5H | 9242 | 300001628 |
| Signal Generator | HP | 8111A | 2215G00867 | 300001117 |

## 5 Annex B Photographs of Test site

**Photo 1 (Radiated Emissions):**

**Photo 2 (Radiated Emissions):**

**Photo 3 (Radiated Emissions):**

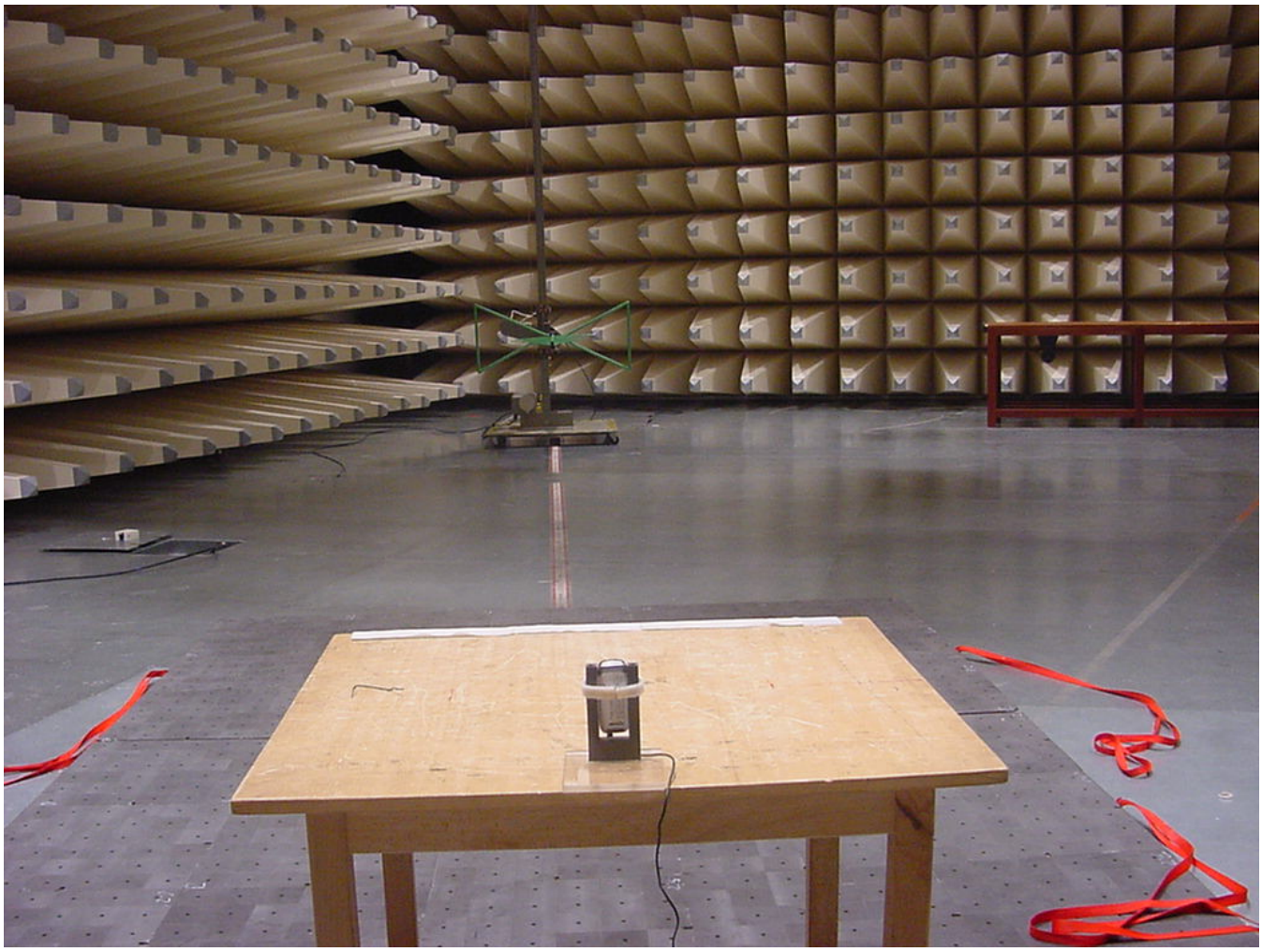


**Photo 4 (Radiated Emissions):**

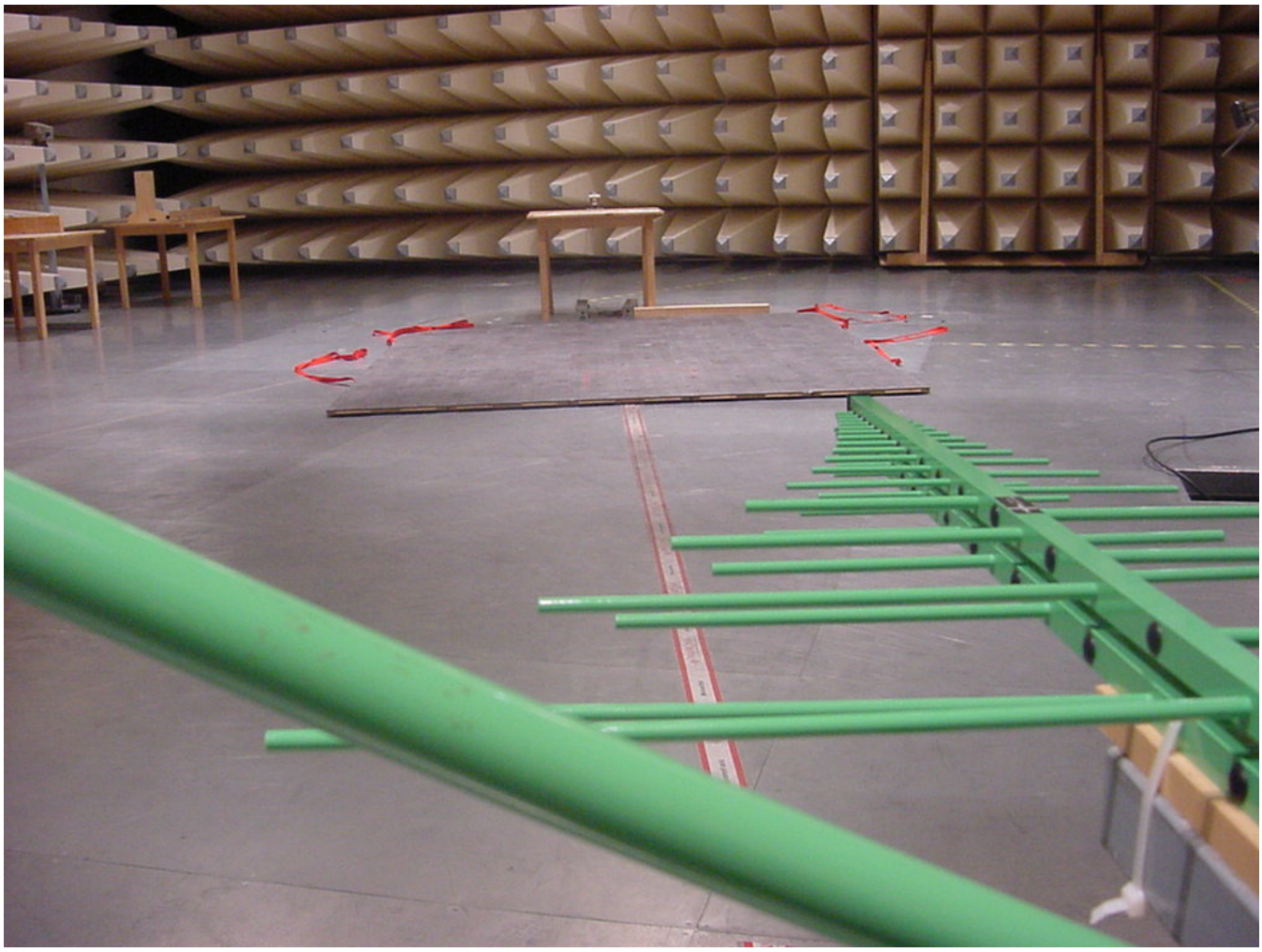


**Photo 5 (Conducted Emissions):**

## 6 Annex C: External Photographs of the Equipment

**Photo No.: 1**

**Photo No.: 2**

Sony Ericsson
CETECOM
Freitag, Mai 27, 2005
Projekt: 2-3949/05-01
Kunde: Sony Ericsson Mobile Communications AB
Typ: AAA-10410121-BV
FCC ID: PY7A1041021
IC: 4170B-A1041021
HW: 4051 / SW: R2AL026

# 7 Annex D: Internal Photographs of the Equipment

**Photo No.: 1**

**Photo No.: 2**

**Photo No.: 3**

**Photo No.: 4**

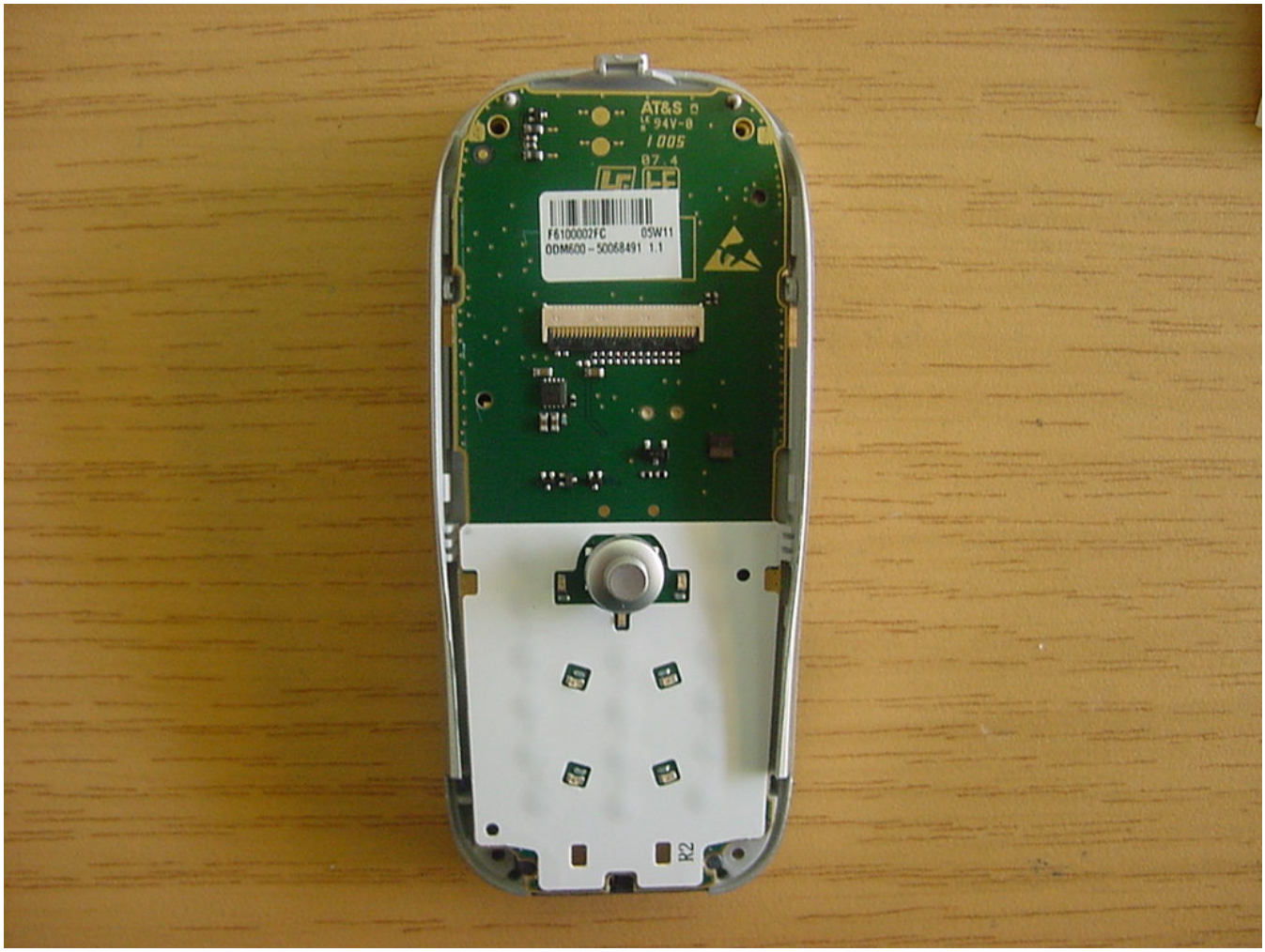


**Photo No.: 5**

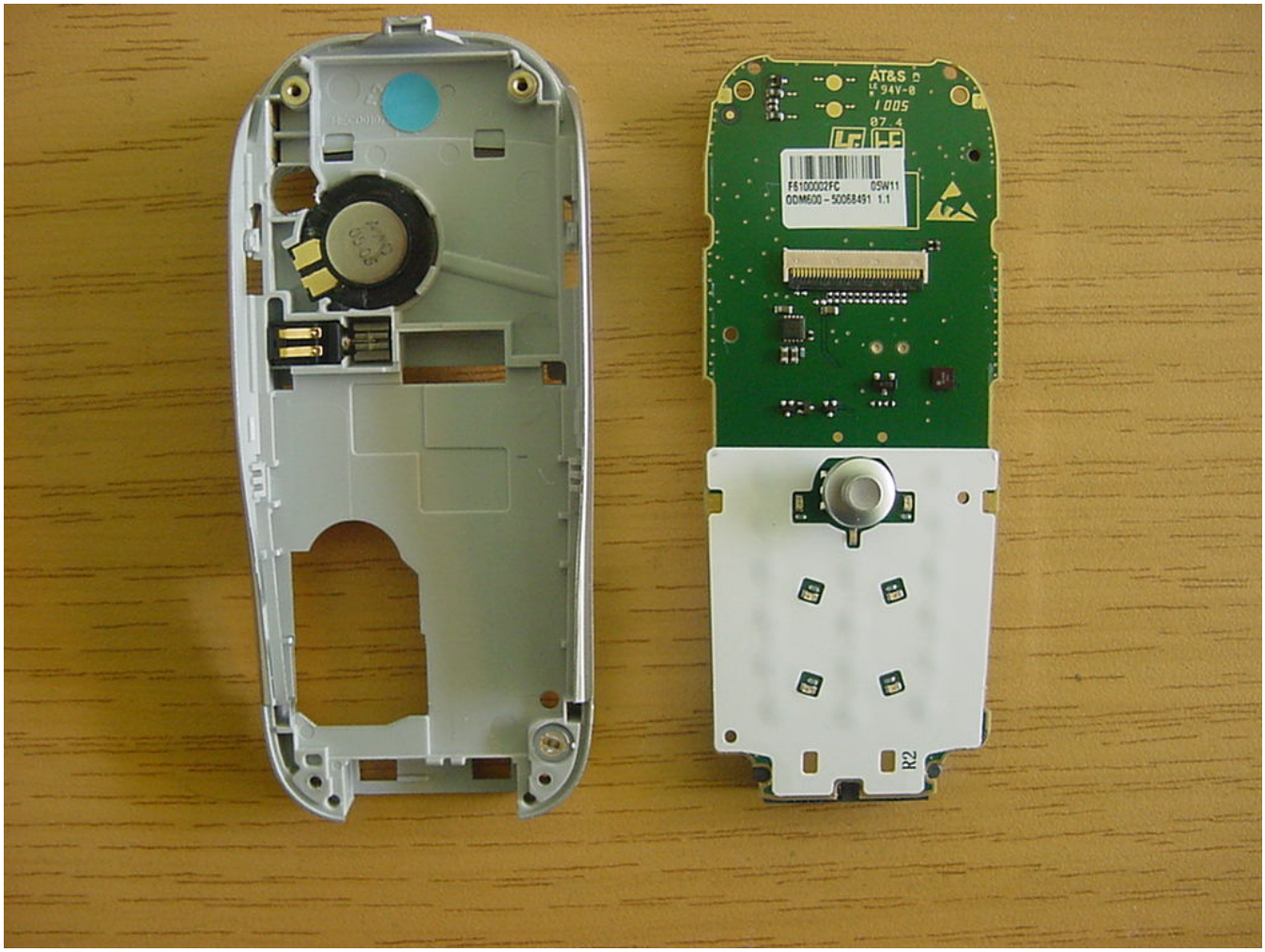
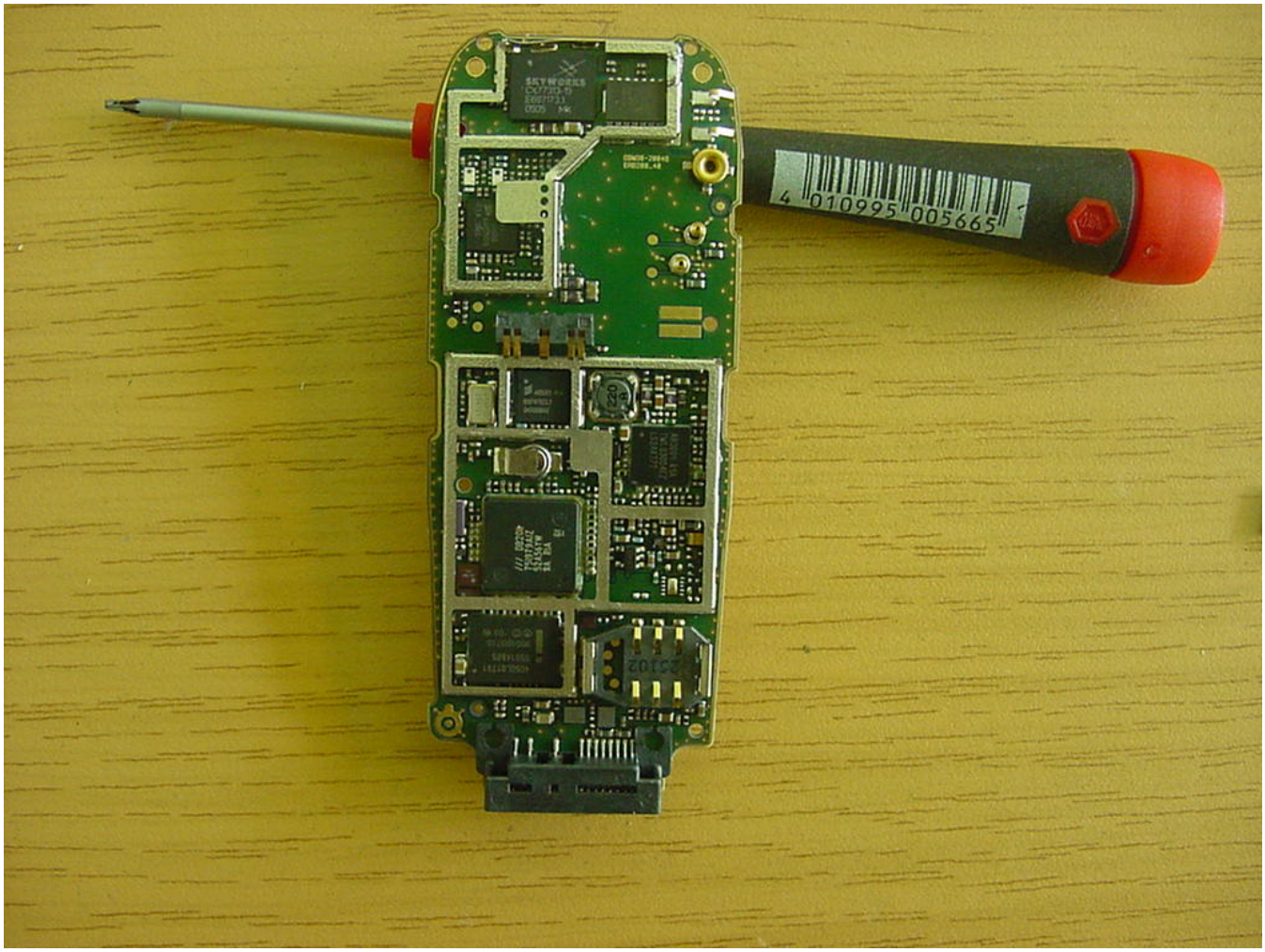



**Photo No.: 6**