



Test & Certification Center (TCC) - Dallas

FCC ID: QTKRH-36

Test Report #: 03-EM-0036.001

18 Aug-03

Accredited Laboratory
Certificate Number: 1819-01

Ver 1.0

CFR 47 Part 2, 22, and 24 Test Report

Test Report Number: 03-EM-0036.001

Terminal device:

FCC ID: QTKRH-36, Model: Hda11, Type: RH-36, HW: 0314, SW: 2.70
(Detailed information is listed in section 4).

Originator: Mark Severson
Function: TCC - Dallas – EMC
Version/Status: 1.0, Approved
Location: TCC Directories
Date: August 18, 2003

Change History:

Version	Date	Status	Handled By	Comments
0.1	18-Aug-03	Draft	Mark Severson	
0.2	18-Aug-03	Proposal	Mark Severson	
0.3	18-Aug-03	Reviewed	Michael Mobley	
1.0	18-Aug-03	Approved	Alan Ewing	

Testing laboratory:

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Date and signatures:

August 18, 2003

For the contents:

Mark Severson, EMC Engineer
Technical Review

Alan C. Ewing, General Manager
Manager Review

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1. GENERAL

1.1 Quality System

The quality system in place for TCC-Dallas conforms to ISO/IEC 17025 and has been audited to the standard by A2LA (American Association of Laboratory Accreditation). The appendix of this report contains the scope of accreditation for A2LA. TCC – Dallas has also been audited using the ISO 9000 Quality System, as part of Nokia Mobile Phones, Inc., by ABS (American Bureau of Shipping) Quality Evaluations Inc.

TCC-Dallas is a recognized laboratory with the Federal Communications Commission in filing applications for Certification under Parts 15 and 18, Registration Number 100060, and Industry Canada, Registration Number IC 661.

1.2 List of General Information Required for Certification

This list is in accordance with FCC Rules and Regulations, CFR 47, Part 2, and to 22H, 24E, Confidentiality.

1.2.1 Sub-part 2.1033(c)(1)

Name and Address of Applicant: Nokia Copenhagen, Product Creation Center,
Frederikskaj 1790 Copenhagen V, Copenhagen, Denmark

Manufacturer: Nokia Finland, Joensuunkatu 7, 24100 Salo, FINLAND

1.2.2 Sub-part 2.1033(c)(2)

FCC ID: RH-36

Model No: Hda11

1.2.3 Sub-part 2.1033(c)(3)

Instruction Manual(s):
Refer to attached EXHIBITS

1.2.4 Sub-part 2.1033(c)(4)

Type of Emission: 256KGXW

1.2.5 Sub-part 2.1033(c)(5)

Frequency Range, MHz: 824.2 to 848.8
1850.2 to 1909.8

Sub-part 2.1033(c)(6) – 980mW EDRP Cellular GSM / 794 mW - EIRP PCS GSM

☐ Switchable ☒ Variable ☐ N/A

FCC Grant Note: BC- The output power is continuously variable from the value listed in this entry to 5%-10% of the value listed.

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1.2.6 Sub-part 2.1033(c)(7)

Maximum Power Rating, Watts: 980mW

1.2.7 Sub-part 2.1033(c)(8)

Voltages & Currents in all elements in final R.F. Stage, including final transistor or solid-state device:

Collector Current, A = per manual

Collector Voltage, Vdc = per manual

Supply Voltage, Vdc = 3.8

1.2.8 Sub-part 2.1033(c)(9)

Tune-up Procedure:

Refer to attached EXHIBITS

1.2.9 Sub-part 2.1033(c)(10)

Circuit Diagram/Circuit Description:

Including description of circuitry & devices provided for determining and stabilizing frequency, for suppression of spurious radiation, for limiting modulation and limiting power.

Refer to attached EXHIBITS

1.2.10 Sub-part 2.1033(c)(11)

Label Information:

Refer to attached EXHIBITS

1.2.11 Sub-part 2.1033(c)(12)

Photographs:

Refer to attached EXHIBITS

1.2.12 Sub-part 2.1033(c)(13)

Digital Modulation Description:

N/A

1.2.13 Sub-part 2.1033(c)(14)

Test and Measurement Data:

FOLLOWS

1.3 Objective

All tests and measurement data shown was performed to determine whether the selected handset was in compliance as specified in FCC: CFR47 Parts 2.947, 2.1033(c), 2.1041, 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, Part 22, and Part 24.

1.4 Test Summary

Test Results: *The test result relates only to those tested devices mentioned in Section 4 of this test report.*

Test Performed	Reference	Section of Report	Complies / Does not comply
RF Power Output (Radiated)	FCC Part 22.913(a) / 24.232(b)	6	Complies
Occupied Bandwidth: Transmitter Conducted Measurements	FCC Part 2.1049(c)(1), 24.238(a)(b)	7	Complies
Spurious Emissions at Antenna Terminals	FCC Part 2.1051	8	Complies
Field Strength of Spurious Radiation	FCC Part 2.1053	9	Complies
Frequency Stability (Temperature Variation)	FCC Part 2.1055(a)(1)(b), 24.235	10	Complies
Frequency Stability (Voltage Variation)	FCC Part 2.1055(d)(1)(2), 24.235	11	Complies



2. STANDARDS BASIS

Testing has been carried out in accordance with:

REF.	Code of the standard	Name of the standard
1	ANSI C63.4	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz.
2	FCC: CFR 47 Part 2	Code of Federal Regulations (CFR) Title 47, Part 2 – Frequency Allocations and Radio Treaty Matters; General Rules and Regulations: Subpart J – Equipment Authorization Procedures
3	FCC: CFR 47 Part 22	Code of Federal Regulations (CFR) Title 47, Part 22 – Public Mobile Services: Subpart H – Cellular Radiotelephone Service
4	FCC: CFR 47 Part 24	Code of Federal Regulations (CFR) Title 47, Part 24 – Personal Communications Services: Subpart E – Broadband PCS
5	RSS-132	800 MHz Cellular Telephones Employing New Technologies
6	RSS-133	2 GHz Personal Communications Services, Industry Canada
7	RSS-212	Test Facilities and Test Methods for Radio Equipment, Industry Canada (Provisional)
8	RSP-100	Radio Equipment Certification Procedure

Note: Unless otherwise stated, (by reference to a version number and a publication date), the latest version of the above documents applies.

Deviations:

Not Applicable.



3. LIST OF ABBREVIATIONS, ACRONYMS AND TERMS

3.1 Abbreviations

dB - decibel

dBm - decibels per milliwatt (absolute measurement)

GHz - gigahertz or 1000000000 hertz

kHz - kilohertz or 1000 hertz

MHz - megahertz or 1000000 hertz

3.2 Acronyms

AMPS - Advanced Mobile Phone System

BSS - Base Station Simulator

CDMA - Code Division Multiple Access

EDRP - Effective Dipole Radiated Power

EIRP - Effective Isotropic Radiated Power

EMC - Electromagnetic Compatibility

EMI - Electromagnetic Interference

ERP - Effective Radiated Power

EUT - Equipment under Test

GSM - Global System for Mobile communications

PCS - Personal Communications Services

RF - Radio Frequency

TDMA - Time Division Multiple Access

3.3 Terms

Base Station Simulator (BSS) - simulates all the necessary signals that a phone would experience while on a live network. There are many types of base station simulators catering for all current protocols, i.e., GSM, AMPS, TDMA, and CDMA.

Cellular - refers to a frequency in the 800MHz band.

PCS - refers to a frequency in the 1900MHz band.

4. EQUIPMENT-UNDER-TEST (EUT)

The results in this report relate only to the items listed below:

4.1 Description of Tested Device(s):

Test Performed	Mode of Operation	Date of Receipt	Condition of Sample	Item	Identifying Information
2.1053, 22.913(a), 24.232(b)(c)	GSM 850/1900	July 28, 2003	Good	Phone	FCC ID: RH-36 Type: Hda11 HW: 0314 SW: 2.70 IMEI: 004400/29/1763496
2.1049(c)(1), 2.1051, 2.1055(d)(1)(2), 2.1055(a)(1)(b), 22.917, 24.235, 24.238(a)(b)	GSM 850/1900	July 28, 2003	Good	Phone	FCC ID: RH-36 Type: Hda11 HW: 0314 SW: 2.70 IMEI: 004400/29/1763892
2.1049(c)(1), 2.1051, 2.1053, 2.1055(d)(1)(2), 2.1055(a)(1)(b), 22.913(a), 22.917, 24.232(b)(c), 24.235, 24.238(a)(b)	GSM 850/1900	July 28, 2003	Good	Battery	Type: BLC-5C Other: 3.7v

4.2 Photograph of Tested Device(s):

Refer to attached EXHIBITS

5. TEST EQUIPMENT LIST

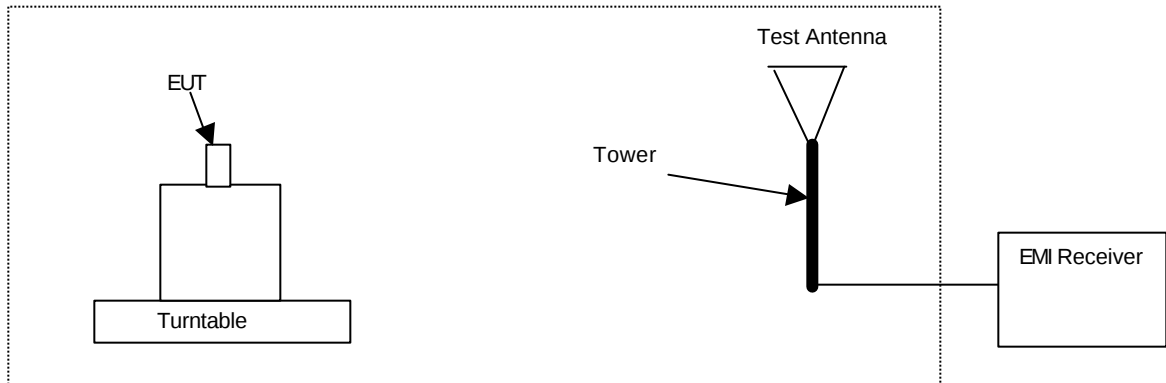
The listing below indicates the test equipment utilized for the test (s). Calibration interval on all items listed can be obtained from the Engineering Services Group within NMP, Product Creation - Dallas. Where relevant, measuring equipment is subjected to in-service checks between testing. TCC - Dallas shall notify clients promptly, in writing, of identification of defective measuring equipment that casts doubt on the validity of results given in this report.

Test/ Section of Report	NMP#	Test Equipment	Mfr. #	Model #
7, 8	N/A	3GHz High Pass Filter	Trilithic Inc.	4HC2900/18000-1.1-KK
7, 8	N/A	2GHz High Pass Filter	Trilithic Inc.	3HC1900/18000-1-KK
7, 8	N/A	1GHz High Pass Filter	Wainwright.	WHK949-9SS
7, 8	NMP03155	Power Splitter (must have 6 dB insertion loss)	HP	33120A
7, 8	NMP02664 NMP02665	EMI Receiver	Agilent	8546A / 85460A
7, 8	N/A	6dB Attenuator	Weinshchel	Model 2
7, 8	NMP02680	Spectrum Analyzer	Agilent	E7405A
6, 9	NMP01472	Biconilog Antenna	ETS	3142B
6, 9	NMP00368 NMP00367	EMI Receiver	Agilent	8546A / 85460A
6, 9	NMP00064	Horn Antenna	EMCO	3115
6, 9	NMP02857	Horn Antenna	EMCO	3115
6, 9	NMP02846	Turntable and Tower Controller	Sunol	Turntable FM2022, Controller 2846
6, 9	NMP02679	Spectrum Analyzer	Agilent	E7405A
6, 9	NMP02671	Signal Generator	Agilent	83630B
10	NMP00837	Temperature Chamber	Tenney Environmental	N/A
9	NMP00001	RF preamplifier	Agilent	HP8449B
6, 9	NMP02549	Power Meter	Boonton	4232A
6, 9	NMP02673	Power Sensor	Boonton	51015
9	NMP02283	Spectrum Analyzer	Agilent	8593EM
7, 8, 10,11	NMP00047	Base Station Emulator	Rhode & Schwarz	CMU200
10, 11	NMP00627	DC Power Supply	Hewlett Packard	E3631A
10,11	NMP00490	Multi-Meter	Fluke	87III
6, 9	NMP02666	Base Station Emulator	Rhode & Schwarz	CMU200

6. RF POWER OUTPUT (RADIATED)

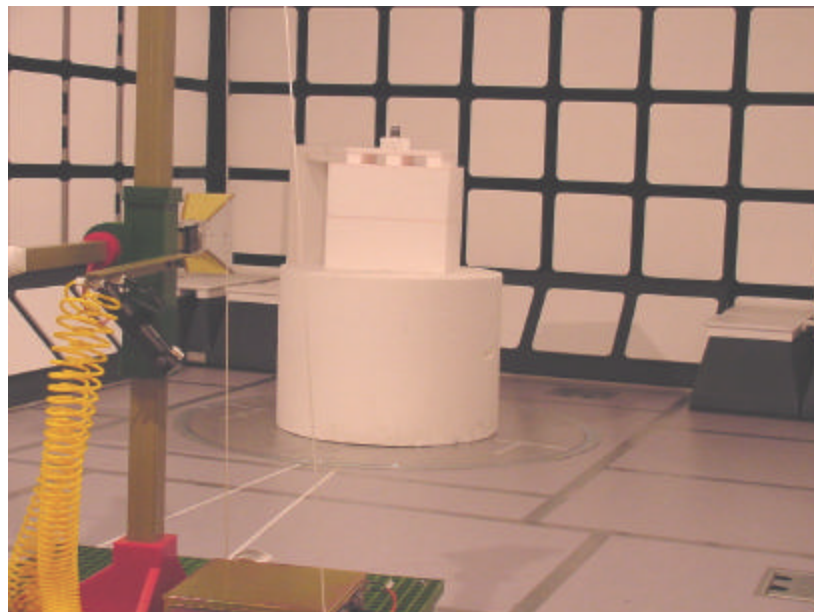
Specification: FCC Part 22.913(a), 24.232(b)(c)

6.1 Setup



6.2 Pass/Fail Criteria

Band	FCC Limit (dBm)
Cellular	38.5 (EDRP)
PCS	33.0 (EIRP)



6.3 Detailed Test Results

Test Technician / Engineer	Jesse Torres	
Date of Measurement	8-Aug-03	
Temperature / Humidity	23 to 24 °C	39 to 44 %RH
Test Result	Complies	

Note: measurements were performed with 3MHz RBW/VBW.

Cellular GSM850 EDRP

Channel	Freq (Max) MHz	EDRP (dBm)	FCC Limit (dBm)
128	824.20	27.98	38.5
190	836.60	29.91	38.5
251	848.80	29.62	38.5

PCS GSM1900 EIRP

Channel	Freq (Max) MHz	EIRP (dBm)	FCC Limit (dBm)
512	1850.20	25.90	33.0
661	1880.00	27.00	33.0
810	1909.80	29.00	33.0

6.4 Measurement Uncertainty

The measurement uncertainty for this test is +/- 2.4dB for 800 to 2000 MHz.

7. OCCUPIED BANDWIDTH (TRANSMITTER CONDUCTED MEASUREMENTS)

Specification: FCC Part 2.1049(c)(1), 24.238(a)(b)

7.1 Setup

Testing was performed with the EUT connected to a 6dB attenuator, 6dB splitter, filter bank and then to the EMI receiver. The base station simulator was connected to the other port of the splitter to establish a call.





7.2 Pass/Fail Criteria

Occupied Bandwidth, Out of Band

Band	Frequency Range (MHz)	FCC Limits (dBm)
Cellular 800, Low Channel	< 824	-13
Cellular 800, High Channel	> 849	-13
PCS 1900, Low Channel	< 1850	-13
PCS 1900, High Channel	> 1910	-13

Occupied Bandwidth, In Band

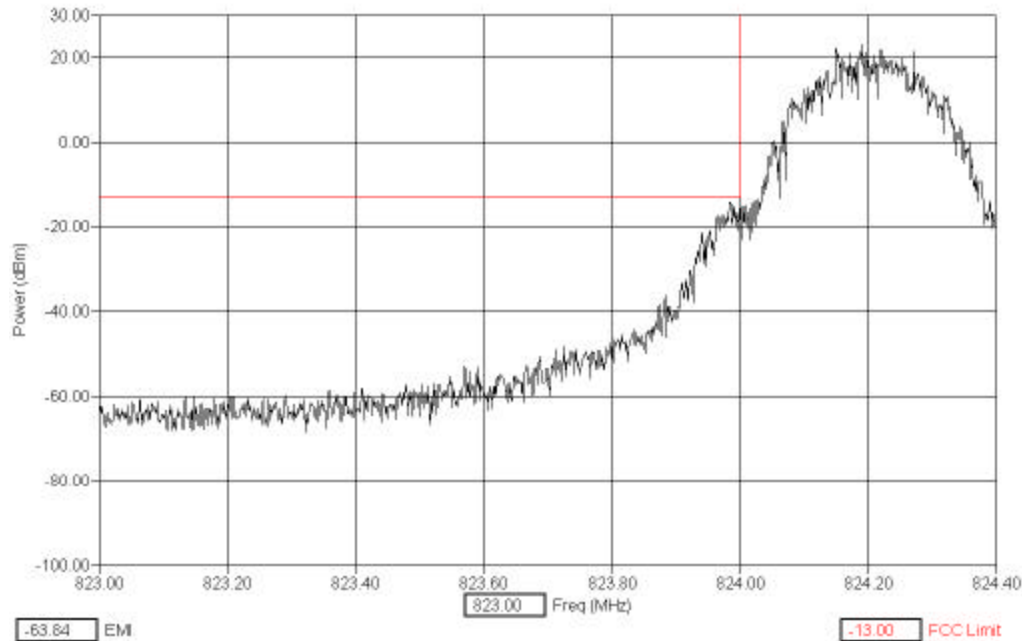
No pass/fail, these plots are used to determine the emission designators.

7.3 Detailed Test Results

Test Technician / Engineer	Jesse Torres/Chi Nguyen	
Date of Measurement	31-Jul-03	
Temperature / Humidity	22 °C	49 to 50 %RH
Test Result	Complies	

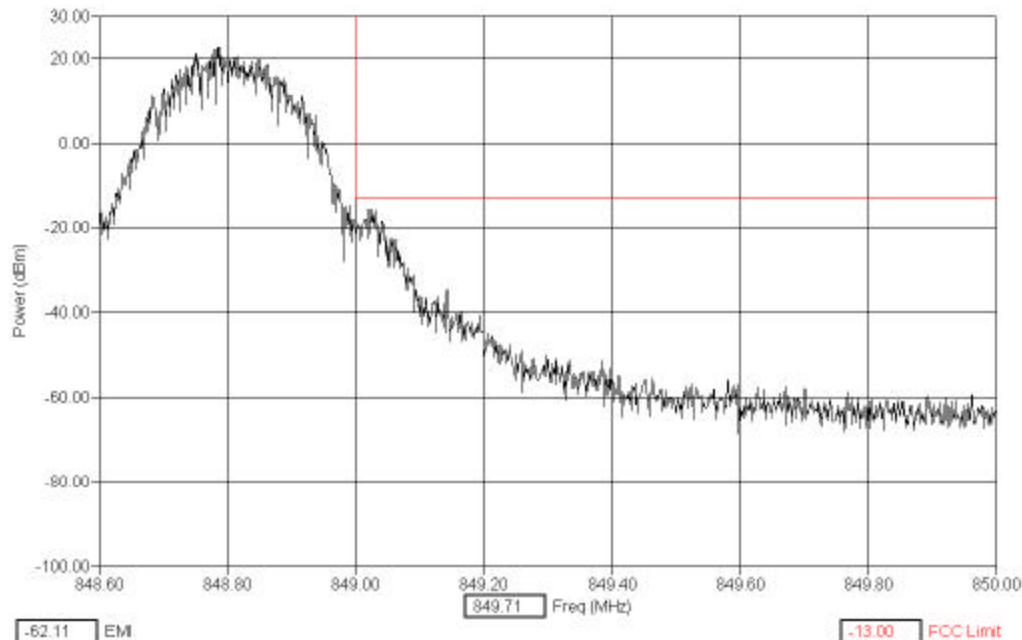
Cellular Band, GSM 850, Channel 128

3 KHz RBW/VBW, 100ms Sweep Time, ref to power level



Cellular Band, GSM 850, Channel 251

3 KHz RBW/VBW, 100ms Sweep Time, ref to power level



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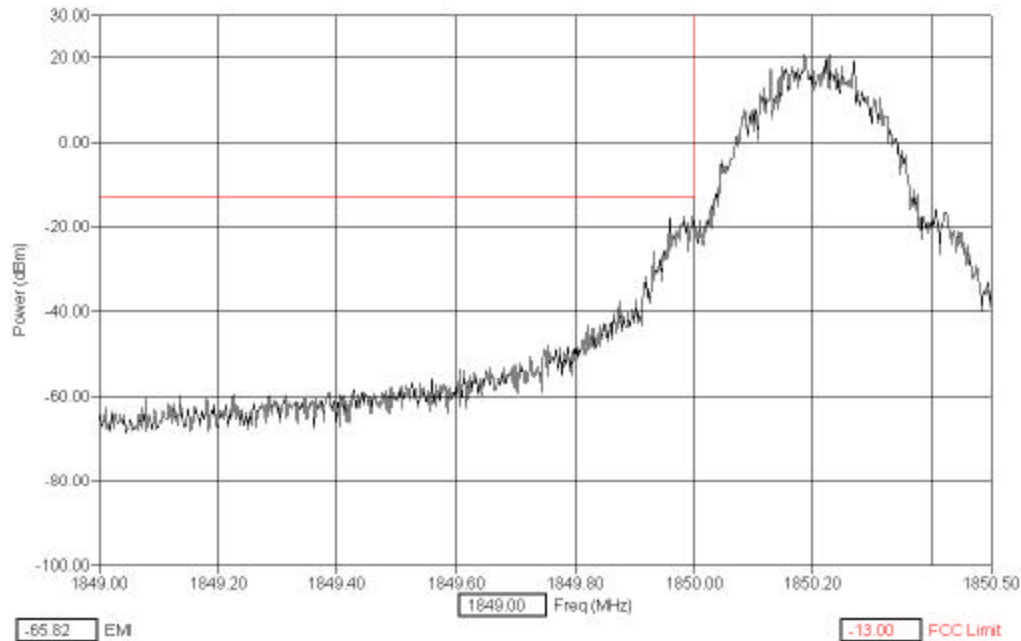
18-Aug-03

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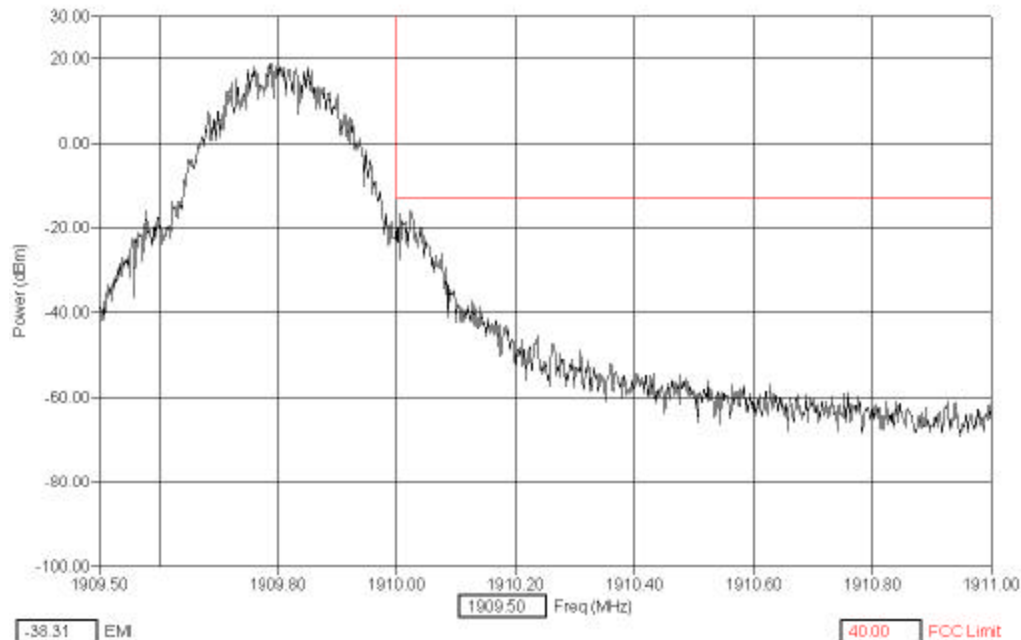
PCS Band, GSM 1900, Channel 512

3 KHz RBW/VBW, 100ms Sweep Time, ref to power level



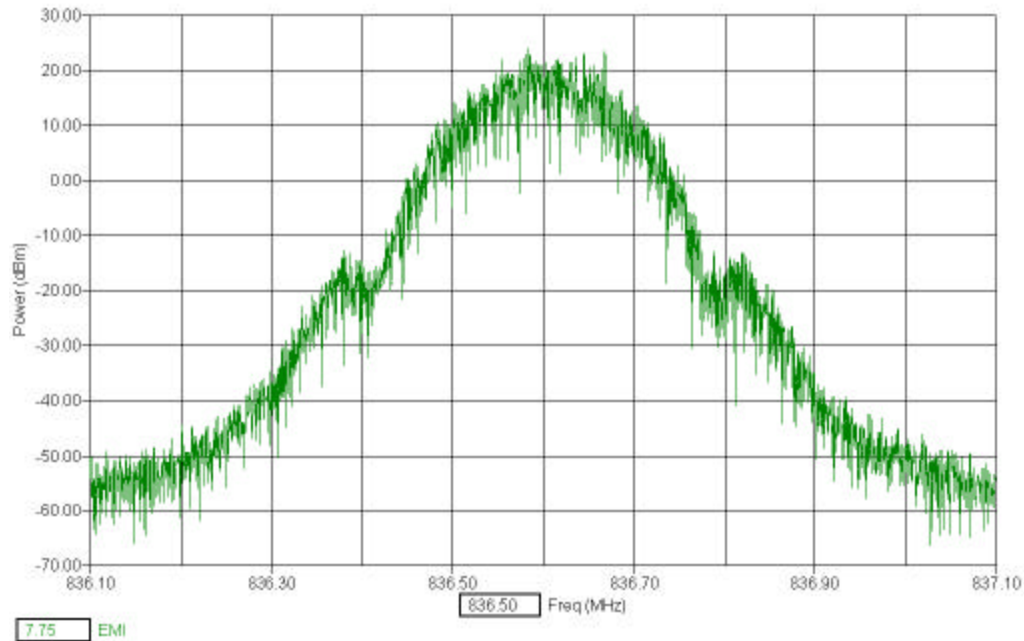
PCS Band, GSM 1900, Channel 810

3 KHz RBW/VBW, 100ms Sweep Time, ref to power level



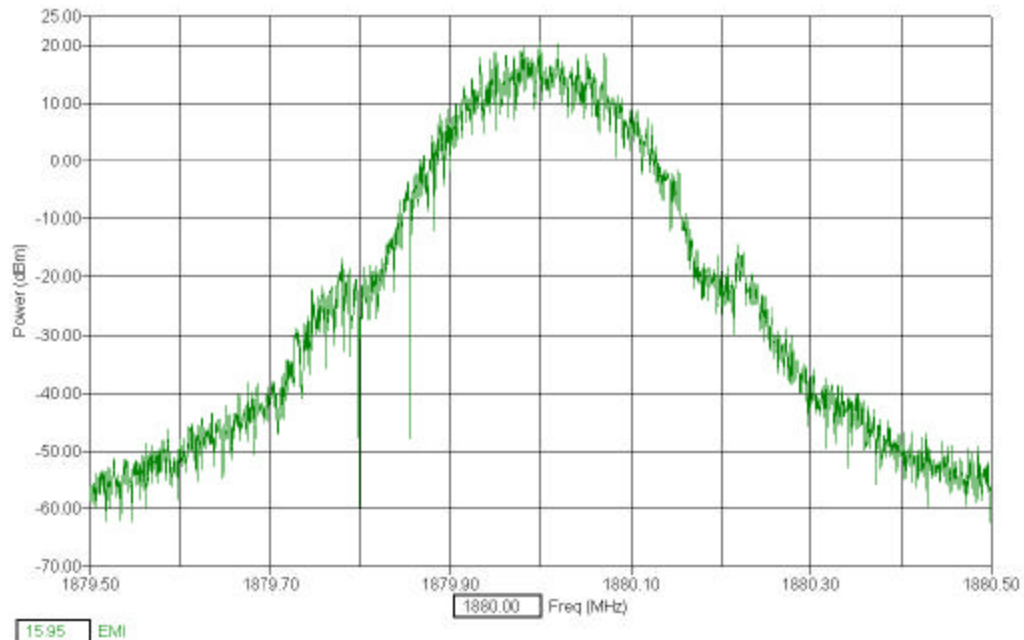
Occupied Bandwidth, In Band; Cellular, GSM 850, Channel 190

3 KHz RBW/VBW, 100ms Sweep Time, ref to power level



Occupied Bandwidth, In Band; PCS, GSM 1900, Channel 661

3 KHz RBW/VBW, 100ms Sweep Time, ref to power level





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7.4 Measurement Uncertainty

The measurement uncertainty for this test is +/- 3.7dB for 100kHz - 1000MHz and +/- 5.3dB for 1 - 20GHz.

8. SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Specification: FCC Part 2.1051

8.1 Setup

Testing was performed with the EUT connected to a 6dB attenuator, 6dB splitter, filter bank and then to the EMI receiver. The base station simulator was connected to the other port of the splitter to establish a call. Filters were introduced to reduce or eliminate spurious emission, which could be generated internally in the EMI receiver.



8.2 Pass/Fail Criteria

Band	Frequency Range (MHz)	FCC Limits (dBm)
Cellular / PCS	30 – 20000 *	-13

* Frequency to be investigated up to the 10th harmonic of the highest clock or frequency used.

8.3 Detailed Test Results

Test Technician / Engineer	Chi Nguyen	
Date of Measurement	30-Jul-03	
Temperature / Humidity	22 to 23 °C	49 to 50 %RH
Test Result	Complies with FCC 2.1051	

Note 1: EMI (dBm) = trace (dBuV) + cable loss (dB) + filter loss (dB).

Note 2: measurements were performed with 3MHz RBW/VBW.



Cellular Band, GSM 850 MHz, Channel 128

Freq (Max) (MHz)	(PK) EMI (dBm)	FCC Limit (dBm)
1647.16	-44.27	-13.00
2472.69	-42.88	-13.00
3294.23	-42.79	-13.00
4119.27	-42.99	-13.00
4945.02	-41.45	-13.00
5770.87	-41.13	-13.00
6593.10	-40.07	-13.00
7415.46	-37.13	-13.00
8241.61	-38.78	-13.00

Cellular Band, GSM 850 MHz, Channel 190

Freq (Max) (MHz)	(PK) EMI (dBm)	FCC Limit (dBm)
1672.90	-45.37	-13.00
2507.59	-43.10	-13.00
3347.06	-42.62	-13.00
4182.19	-42.91	-13.00
5016.64	-42.53	-13.00
5854.64	-42.70	-13.00
6690.44	-41.30	-13.00
7528.60	-38.34	-13.00
8363.61	-37.89	-13.00

Cellular Band, GSM 850 MHz, Channel 251

Freq (Max) (MHz)	(PK) EMI (dBm)	FCC Limit (dBm)
1697.52	-44.29	-13.00
2547.90	-42.80	-13.00
3397.32	-42.21	-13.00
4244.94	-41.54	-13.00
5093.61	-42.24	-13.00
5939.30	-41.13	-13.00
6791.94	-39.58	-13.00
7639.35	-36.22	-13.00
8487.02	-36.09	-13.00

PCS Band, GSM 1900 MHz, Channel 512

Freq (Max) (MHz)	(PK) EMI (dBm)	FCC Limit (dBm)
3700.88	-42.94	-13.00
5551.36	-36.37	-13.00
7398.40	-38.74	-13.00
9251.15	-36.44	-13.00
11104.20	-35.89	-13.00
12951.07	-36.37	-13.00
14802.14	-32.08	-13.00
16651.72	-32.05	-13.00
18502.30	-29.74	-13.00

PCS Band, GSM 1900 MHz, Channel 661

Freq (Max) (MHz)	(PK) EMI (dBm)	FCC Limit (dBm)
3759.71	-43.60	-13.00
5641.05	-36.56	-13.00
7518.77	-37.90	-13.00
9402.76	-37.84	-13.00
11279.39	-35.76	-13.00
13161.74	-35.69	-13.00
15038.88	-33.34	-13.00
16921.56	-32.34	-13.00
18797.74	-31.59	-13.00

PCS Band, GSM 1900 MHz, Channel 810

Freq (Max) (MHz)	(PK) EMI (dBm)	FCC Limit (dBm)
3819.51	-42.91	-13.00
5728.60	-35.31	-13.00
7641.15	-38.36	-13.00
9551.90	-38.13	-13.00
11458.62	-37.92	-13.00
13369.95	-31.43	-13.00
15275.97	-33.20	-13.00
17187.13	-31.83	-13.00
19096.33	-31.16	-13.00

8.4 Measurement Uncertainty

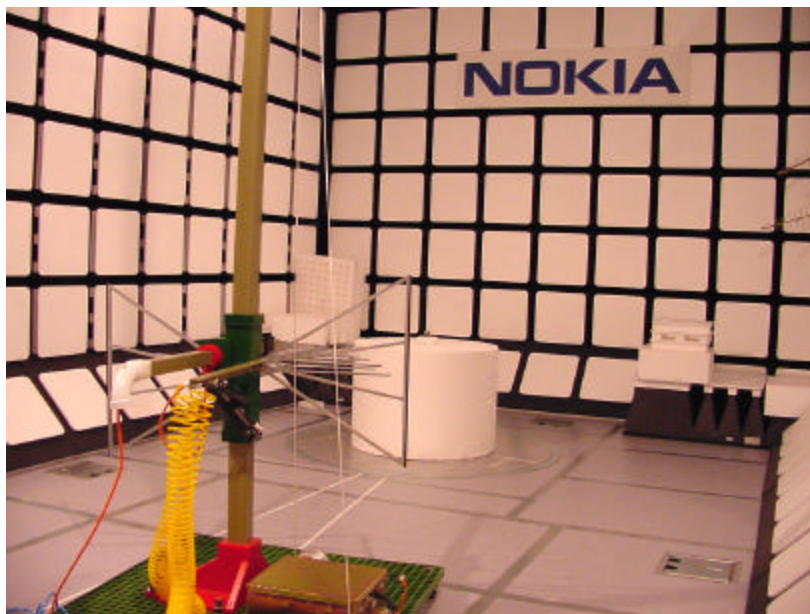
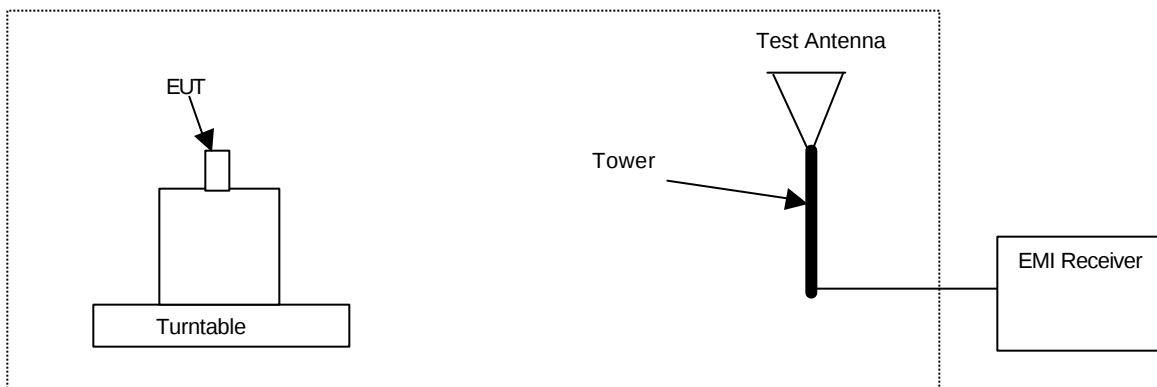
The measurement uncertainty for this test is +/- 3.7dB for 100kHz - 1000MHz and +/- 5.3dB for 1 - 20GHz.

9. FIELD STRENGTH OF SPURIOUS RADIATION

Specification: FCC Part 2.1053

9.1 Setup

Test equipment set-up.



9.2 Pass/Fail Criteria

Band	Frequency Range (MHz)	FCC Limit (dBm)
Cellular / PCS	30 – 20000*	-13

- Frequency to be investigated up to the 10th harmonic of the highest clock or frequency used.

Substitution method according to ANSI/TIA/EIA 603-1 was used for final measurements.

9.3 Detailed Test Results

Test Technician / Engineer	J. Love, J. Torres	
Date of Measurement	4-Aug-03 to 8-Aug-03	
Temperature / Humidity	22 to 25 °C	35 to 57 %RH
Test Result	Complies with FCC 2.1053	

Note: 30MHz to 1GHz were performed with 1MHz RBW/VBW; 1GHz to 3GHz were performed with 1MHz RBW/VBW; 3GHz to 6GHz were performed with 3MHz RBW/VBW; 6GHz to 18GHz were performed with 1MHz RBW/VBW.

Cellular Band, GSM 850 MHz, Channel 190

Tuned Frequency (MHz)	Frequency Max (MHz)	PK EMI (dBm) Horizontal	PK EMI (dBm) Vertical	FCC Limit (dBm)
836.6	1673.20	-47.94	-40.05	-13
836.6	2509.80	-34.97	-35.19	-13
836.6	3346.40	-31.13	-31.36	-13
836.6	4183.00	-28.06	-27.72	-13
836.6	5019.60	-25.06	-25.64	-13
836.6	5856.20	-22.4	-22.7	-13
836.6	6692.80	-42.01	-42.39	-13
836.6	7529.40	-39.8	-39.28	-13
836.6	8366.00	-38.85	-38.48	-13

PCS Band, GSM 1900 MHz, Channel 661

Tuned Frequency (MHz)	Frequency Max (MHz)	Pk EMI (dBm) Horizontal	Pk EMI (dBm) Vertical	FCC Limit (dBm)
* 1880.0	3760.00	-28.8	-29.06	-13
1880.0	5640.00	-23.72	-23.24	-13
1880.0	7520.00	-38.41	-39.88	-13
1880.0	9400.00	-37.16	-37.67	-13
1880.0	11280.00	-35.69	-35.47	-13
1880.0	13160.00	-31.22	-30.7	-13
1880.0	15040.00	-30.63	-29.28	-13
1880.0	16920.00	-28.64	-27.99	-13
1880.0	18800.00	-20.53	-23.55	-13

9.4 Measurement Uncertainty

The measurement uncertainty for this test is +/- 5.2dB for 30-300MHz; +/- 5.2dB for 300-1000MHz, +/- 5.6dB for 1-6GHz and +/-6.8 for 6-18GHz.

10. FREQUENCY STABILITY (TEMPERATURE VARIATION)

Specification: FCC Part 2.1055(a)(1)(b), 24.235

10.1 Setup

The EUT was connected to the base station simulator to measure the RF power output.

10.2 Pass/Fail Criteria

Not Applicable

10.3 Detailed Test Results

Test Technician / Engineer	Jesse Torres		
Date of Measurement	1-Aug-03		
Temperature / Humidity	22 to 23 °C	49 to 52 %RH	
Test Result	Complies with FCC 2.1055		

GSM850 Frequency Stability (Temperature)

Temperature (C)	Band	Channel	Frequency Error Max (Hz)
-30	GSM850	190	-23.63
-20	GSM850	190	-20.86
-10	GSM850	190	-14.62
0	GSM850	190	-20.89
10	GSM850	190	-13.67
20	GSM850	190	-20.17
30	GSM850	190	-19.23
40	GSM850	190	14.96
50	GSM850	190	18.57

GSM1900 Frequency Stability (Temperature)

Temperature (C)	Band	Channel	Frequency Error Max (Hz)
-30	GSM1900	661	-27.54
-20	GSM1900	661	-39.32
-10	GSM1900	661	-31.94
0	GSM1900	661	-43.04
10	GSM1900	661	-32.82
20	GSM1900	661	-34.76
30	GSM1900	661	-30.69
40	GSM1900	661	23.92
50	GSM1900	661	32.92



11. FREQUENCY STABILITY (VOLTAGE VARIATION)

Specification: FCC Part 2.1055(d)(1)(2), 24.235

11.1 Setup

The EUT was connected to the base station simulator to measure the RF power output.

11.2 Pass/Fail Criteria

Not Applicable

11.3 Detailed Test Results

GSM1900 Frequency Stability (Voltage)

Voltage	Band	Channel	Frequency Error Max (Hz)
*3.3 BEP	GSM1900	661	-22.1
3.8 (Nom)	GSM1900	661	-25.5
4.37 (115%)	GSM1900	661	-31.0
4.39 (Cut off)	GSM1900	661	-33.0

GSM850 Frequency Stability (Voltage)

Voltage	Band	Channel	Frequency Error Max (Hz)
*3.3 BEP	GSM850	190	-12.3
3.8 (Nom)	GSM850	190	-14.0
4.37 (115%)	GSM850	190	-21.5
4.39 (Cut off)	GSM850	190	-21.2

Test & Certification Center (TCC) - Dallas

FCC ID: RH-36
Test Report #: 03-EM-0036.001
18-Aug-03



Accredited Laboratory
Certificate Number: 1819-01

Ver 1.0

TCC-Dallas is accredited by the American Association for Laboratory Accreditation (A2LA) as shown in the scope below:



THE AMERICAN
ASSOCIATION
FOR LABORATORY
ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

NOKIA MOBILE PHONES
Test & Certification Center - Dallas
Irving, TX

for technical competence in the field of

Electrical Testing

The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC 17025 - 1999 "General Requirements for the Competence of Testing and Calibration Laboratories" and any additional program requirements in the identified field of testing. Testing and calibration laboratories that comply with this International Standard also operate in accordance with ISO 9001 or ISO 9002.

Presented this 1st day of October, 2001



Peter Blazynski
President
For the Accreditation Council
Certificate Number 1819.01
Valid to November 30, 2003

For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation

 American Association for Laboratory Accreditation		Test: Wireless GSM (GSM 900/1800/1900 MHz) TDMA	Test Method: 3GPP TS 34.010-1, -2, -3 3GPP TS 34.10-4 PTCRB SAPBD 03 CTIA TDMA/AMPS Test Plan (excluding Sections 7.3.3 & 7.3.4) TIA/EIA-136-278
SCOPE OF ACCREDITATION TO ISO/IEC 17025:1999			
NOKIA MOBILE PHONES TEST & CERTIFICATION CENTER - DALLAS 6621 Concourse Drive Irving, TX 75039 Attn: Engr. Phone: 972.894.4744			
ELECTRICAL			
Valid to: November 30, 2001		Certificate Number: 1819-01	
In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following Electromagnetic Compatibility (EMC), Specific Absorption Rate (SAR), and radio, wireless communications devices:			
Tests	Test Method		
Emissions			
Conducted and Radiated	CFR 47 Part 2, 15, 22, 24 CISPR 22, EN 55022 FCC 47 CFR 15.101, 112 and 113 3GPP TS 34.010-1 Section 12.2 ETSI EN 301 489-1, EN 301 489-7 (using ANSI C63.4 and RSS-212)		
Specific Absorption Rate	IEEE 1528 EN 50360, EN 50361 CFR 47 Parts 2 and 24 OCT Bulletin 65 and Supplement C RSS-182		
Immunity			
Vibrational Immunity	ISO 7613-1; ETSI EN 301 489-1; EN 301 489-7		
Electrostatic Discharge (ESD)	EN 61000-4-2; ETSI EN 301 489-1; EN 301 489-7		
RF Radiated	EN 61000-4-3; ETSI EN 301 489-1; EN 301 489-7		
Electrical Fast Transient/Burst	EN 61000-4-4; ETSI EN 301 489-1; EN 301 489-7		
Surge	EN 61000-4-5; ETSI EN 301 489-1; EN 301 489-7		
Conducted Voltage Dips, Short Interruptions and Voltage Variations	EN 61000-4-11; ETSI EN 301 489-1; EN 301 489-7		

(A2LA Cert. No. 1819-01) Revised 09/18/02

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Peter R. Rhyne

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Peter R. Rhyne

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"This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this report have been determined to be in accordance with the laboratory's terms of accreditation unless stated otherwise in the report."

Should this report contain any data for tests for which we are not accredited, such data would not be covered by this laboratory's A2LA accreditation.