CFR 47 Part 2, 22, and 24 Test Report

Test Report Number: WR0895.001

Terminal device: FCC ID: GMLRM-88 Model: E62-1 Type: RM-88 HW: SW: Vp5.4002.00
(Detailed information is listed in section 4).

Originator:	Michael Sundstrom
Function:	TCC - Dallas – EMC
Version/Status:	1.0 / Approved
Location:	TCC Directories
Date:	16-Dec-05

Change History:

Version	*Date*	*Status*	*Handled By*	*Comments*
0.1	14-Dec-05	Draft	Michael Sundstrom	
0.2	16-Dec-05	Proposal	Michael Sundstrom	
0.3	16-Dec-05	Reviewed	Hai To	
1.0	16-Dec-05	Approved	Hai To	

Testing laboratory:
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Client:
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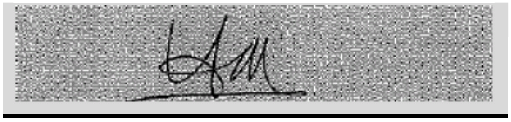
Date and signatures: **16-Dec-05**

For the contents:

Michael Sundstrom
Operator Review



Hai To
Technical 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). 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 661N.

Test and Measurement Data: FOLLOWS

1.2 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.

1.3 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 / Not Tested
Occupied Bandwidth: Transmitter Conducted Measurements	FCC Part 2.1049(c)(1), 24.238(a)(b)	5	Complies
Frequency Stability (Temperature Variation)	FCC Part 2.1055(a)(1)(b), 24.235	6	Complies
Frequency Stability (Voltage Variation)	FCC Part 2.1055(d)(1)(2), 24.235	7	Complies

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-129	800 MHz Dual-Mode CDMA Cellular Telephones
6	RSS-132	800 MHz Cellular Telephones Employing New Technologies
7	RSS-133	2 GHz Personal Communications Services, Industry Canada
8	RSS-212	Test Facilities and Test Methods for Radio Equipment, Industry Canada (Provisional)
9	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.

2. LIST OF ABBREVIATIONS, ACRONYMS AND TERMS

2.1 Abbreviations

dB - decibel

dBc - decibels from carrier

dBm - decibels per milliwatt (absolute measurement)

GHz - gigahertz or 1000000000 hertz

kHz - kilohertz or 1000 hertz

MHz - megahertz or 1000000 hertz

2.2 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

2.3 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.

3. EQUIPMENT-UNDER-TEST (EUT)

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

3.1 Description of Tested Device(s):

Test Performed	Mode of Operation	Date of Receipt	Condition of Sample	Item	Identifying Information
FCC Part 2.1049	GSM 850 GSM 1900 GPRS 850 GPRS 1900	06-Dec-05	Operational	Phone	FCC ID: GMLRM-88 Type: RM-88 HW: 4004 SW: Vp5.4002.00 IMEI: 001004/00/192409/2
FCC Part 2.1055	GSM 850 GSM 1900 GPRS 850 GPRS 1900	12-Dec-05	Operational	Phone	FCC ID: GMLRM-88 Type: RM-88 HW: 4004 SW: Vp5.4002.00 IMEI: 001004/00/192912/5
FCC Part 2.1049; 2.1055	GSM 850 GSM 1900 GPRS 850 GPRS 1900	06-Dec-05	Operational	Battery	Type: BP-5L Other: 3.7 V

3.2 Photograph of Tested Device(s):

Refer to attached EXHIBITS

4. 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.

Section of Report	NMP#	Test Equipment	Mfr. #	Model #	Calibration Due Date	Calibration Interval
5	02664/02665	EMI Receiver	Agilent	8546A / 85460A	09-Feb-06	12 Months
5	N/A	6dB Attenuator	Weinshcel	Model 2	N/A	N/A
5	02666	Base Station	R&S	CMU 200	25-May-06	12 Months
5	N/A	Power Splitter	HP	33120A	N/A	N/A
5	02680	Spectrum Analyzer	Agilent	E7405A	29-Dec-05	12 Months
6,7	00485	Multi-Meter	Fluke	87III	12-May-06	12 Months
6,7	00837	Temperature Chamber	Tenney Environmental	N/A	20-Jan-06	12 Months
6,7	00757	Power Supply	Tektronix	PS280	CNR	N/A

5. OCCUPIED BANDWIDTH (TRANSMITTER CONDUCTED MEASUREMENTS)

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

5.1 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.

Refer to attached EXHIBITS**.**

5.2 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.

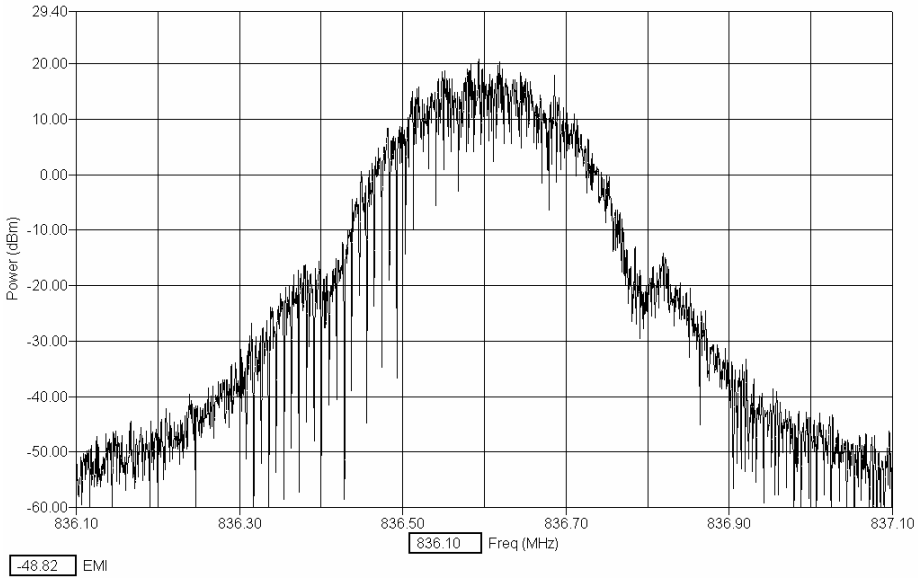
5.3 Detailed Test Results

Test Technician / Engineer	Michael Sundstrom
Date of Measurement	06-Dec-05
Temperature	21-24 °C
Humidity	25-32 %RH
Test Result	Complies

Occupied Bandwidth, In Band

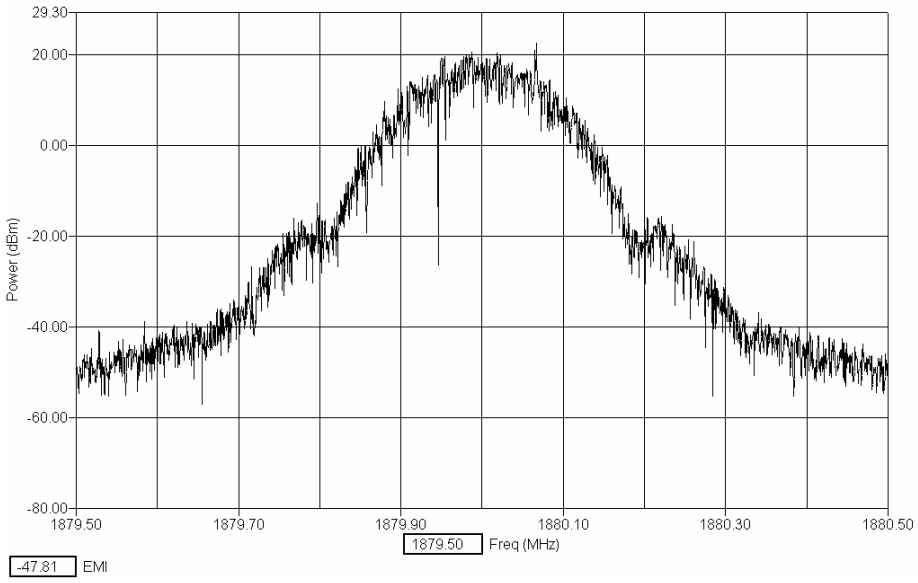
GSM850 - GMSK Modulation, Channel 190:

3kHz RBW/VBW



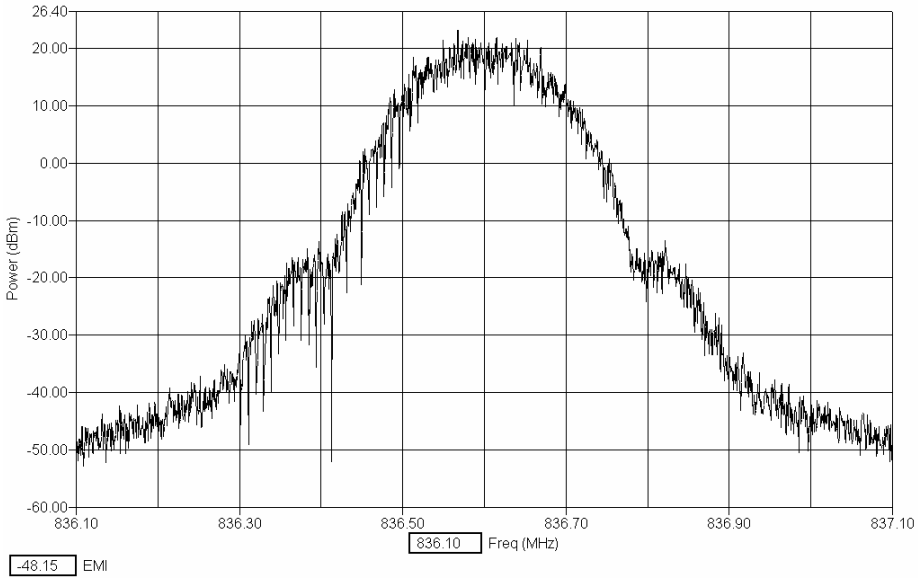
GSM1900 – GMSK Modulation Channel 661:

3kHz RBW/VBW



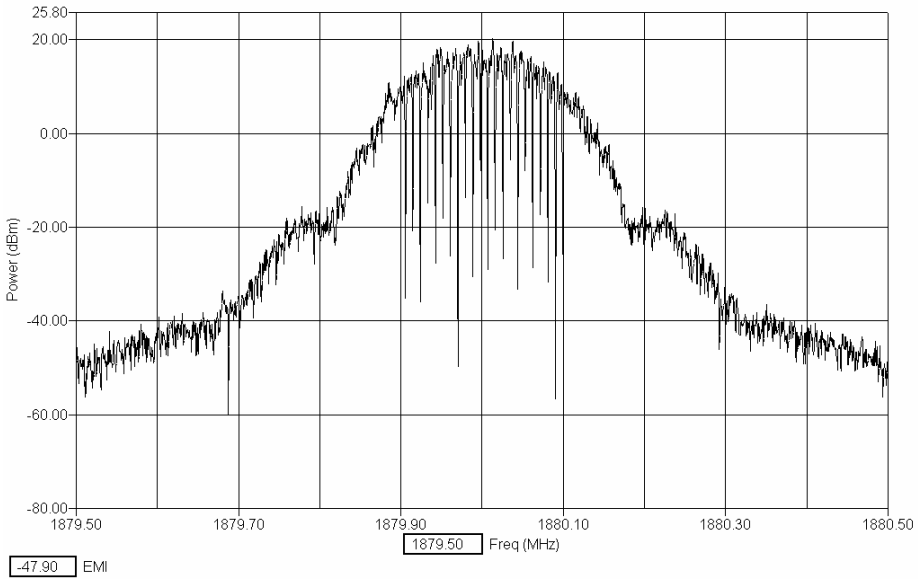
GPRS850 – 8-PSK Modulation, Channel 190:

3kHz RBW/VBW



GPRS1900 – 8-PSK Modulation Channel 661:

3kHz RBW/VBW



6. FREQUENCY STABILITY (TEMPERATURE VARIATION)

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

6.1 Setup

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

6.2 Pass/Fail Criteria

Not Applicable

6.3 Detailed Test Results

Test Technician / Engineer	Michael Sundstrom
Date of Measurement	15-Dec-05
Temperature	21-23 °C
Humidity	26-38 %RH
Test Result	Tested in accordance with 2.1055(a)(1)(b), 24.235 at maximum power setting.

Temp. (ºC)	GSM 850, Channel 190	EGPRS 850, Channel 190	GSM 1900, Channel 661	EGPRS 1900, Channel 661
	Change (Hz)	Change (Hz)	Change (Hz)	Change (Hz)
-30	-49	-41	-84	-94
-20	-40	-41	-94	-88
-10	-38	-38	-85	-100
0	-44	-34	-89	-107
10	-39	-33	-92	-98
20	-38	-35	-85	-89
30	-29	-33	-77	-94
40	-30	-29	-70	-81
50	-31	-28	-79	-90

7. FREQUENCY STABILITY (VOLTAGE VARIATION)

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

7.1 Setup

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

7.2 Pass/Fail Criteria

Not Applicable

7.3 Detailed Test Results

Test Technician / Engineer	Michael Sundstrom
Date of Measurement	14-Dec-05
Temperature	22-24 °C
Humidity	31-38 %RH
Test Result	Tested in accordance with 2.1055(d)(1)(2), 24.235 at maximum power setting.

GSM 850, Call Mode, Channel 190

% of STV	Voltage	Change (Hz)
100 (Nominal)	3.7	-33
115	4.2	-35
Battery End Point	3.2	-38

GPRS 850, Call Mode, Channel 190

% of STV	Voltage	Change (Hz)
100 (Nominal)	3.7	-28
115	4.2	-30
Battery End Point	3.2	-25

GSM 1900, Call Mode, Channel 661

% of STV	Voltage	Change (Hz)
100 (Nominal)	3.7	-77
115	4.2	-84
Battery End Point	3.2	-71

GPRS 1900, Call Mode, Channel 661

% of STV	Voltage	Change (Hz)
100 (Nominal)	3.7	-82
115	4.2	-86
Battery End Point	3.2	-79