Nemko Test Report:	126984-9TRFWL
Applicant:	DAP Technologies 875 Boul. Charest O., Suite 200 Quebec, QC G1N 2C9
Apparatus:	Handheld computer 8900K series
FCC ID:	T5M8900K2
In Accordance With:	FCC Part 22 Subpart H Cellular Radiotelephone Service and FCC Part 24 Personal Communications Services Subpart E Broadband PCS - Fundamental and spurious emissions
Authorized By:	Kevin Ma Kevin Ma, Wireless/EMC Specialist
Date:	November 23, 2009
Total Number of Pages:	13

Nemko Canada Inc.
303 River Road,
Ottawa, Ontario
K1V 1H2
T 1 613 737 9680 **F** 1 613 737 9691**TF** 1 800 563 6336
Email Canada@nemko.com
Web www.nemko.com

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Section 1 : Report Summary

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Parts 22 and 24. Conducted measurements were performed in accordance with ANSI TIA-603-B-2002. Radiated tests were conducted is accordance with ANSI C63.4-2003.

The assessment summary is as follows:

Apparatus Assessed:	Handheld computer 8900K series
Specification:	FCC Part 22 Subpart H and FCC Part 24 Subpart E fundamental and spurious emissions
Compliance Status:	Complies
Exclusions:	None
Non-compliances:	None
Report Release History:	Original Release
Test Location:	Nemko Canada Inc. 303 River Road Ottawa, Ontario K1V 1H2
Registration Number:	176392 (3 m Semi-Anechoic Chamber)
Tests Performed By:	Andrey Adelberg, Senior Wireless/EMC Specialist
Test Dates:	August–September 2009

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

Section 2 : Equipment Under Test

2.1 Identification of Equipment Under Test (EUT)

The following information identifies the EUT under test:

Type of Equipment:	Handheld computer 8900K series
Brand Name:	DAP, Kinsys
Model Number:	8900K2
Serial Number:	HN00007
Nemko Sample Number:	2
FCC ID:	T5M8900K2
Date of Receipt:	June 12, 2009

2.2 Accessories

The following information identifies accessories used to exercise the EUT during testing:

Description:	Docking station (Ethernet-USB host)
Brand Name:	DAP, Microflex
Model Name or Number:	CBCE840
Serial Number:	EH03401
Nemko Sample Number:	5
Connection Port:	Contact connection

Description:	AC adapter
Manufacturer:	Cincon Electronics Co., Ltd.
Model Name or Number:	TRG36A15
Serial Number:	36150-0000202
Nemko Sample Number:	10
Connection Port:	DC jack to the Ethernet-USB host

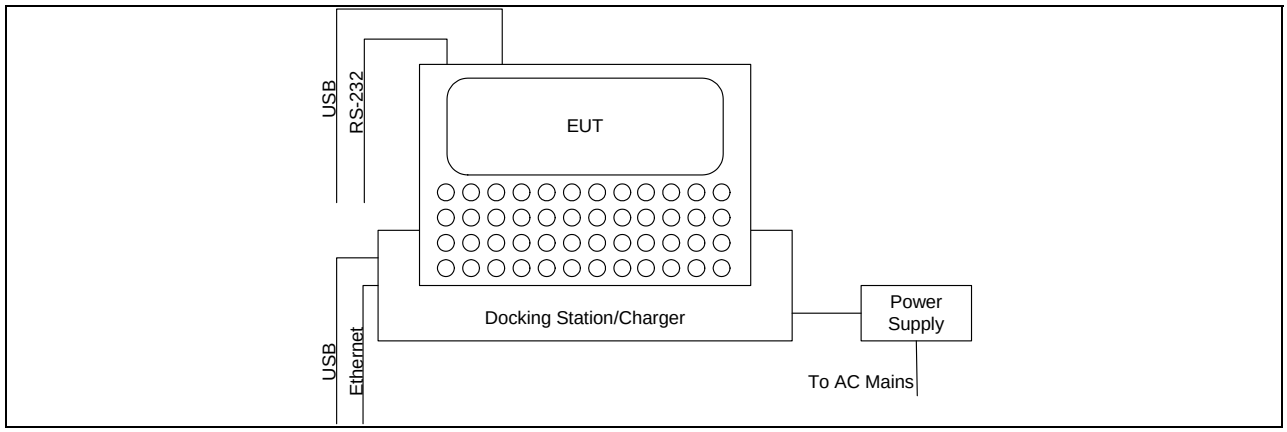
2.3 EUT Description

The EUT is a handheld computer with internal Bluetooth, GSM/W-CDMA and WiFi connectivity. The WiFi/BT and GSM/W-CDMA are restricted in software from operating simultaneously.

2.4 Technical Specifications of the EUT

Operating Bands:	Part 22: GSM-850 and W-CDMA-850 Part 24: GSM-1900 and W-CDMA-1900
Modulation:	(GSM) EDGE; (W-CDMA) UMTS
Power Supply Requirements:	120 VAC, 60 Hz

2.5 EUT Setup diagram



2.6 Operation of the EUT during testing

The EUT was operated using test software that would cause the EUT to transmit continuously.

2.7 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

Section 3 : Test Conditions

3.1 Specifications

The apparatus was assessed against the following specifications:

FCC Part 2 Subpart J, Equipment Authorization Procedures
FCC Part 22 Subpart H Cellular Radiotelephone Service
FCC Part 24 Subpart E, Broadband PCS

3.2 Deviations From Laboratory Test Procedures

No deviations were made from laboratory test procedures.

3.3 Test Environment

All tests were performed under the following environmental conditions:

Temperature range	:	15–30 °C
Humidity range	:	20–75 %
Pressure range	:	86–106 kPa
Power supply range	:	±5 % of rated voltages

3.4 Measurement Uncertainty

Nemko Canada measurement uncertainty has been calculated using guidance of UKAS LAB 34:2003 and TIA-603-B Nov 7, 2002. All calculations have been performed to provide a confidence level of 95 % and can be found in Nemko Canada document MU-003.

3.5 Test Equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Cal. Date	Next Cal.
3m EMI Test Chamber	TDK	SAC-3	FA002047	May 06/09	May 06/10
Bilog	Sunol	JB3	FA002108	Jan. 27/09	Jan. 27/10
Biconical	Sunol	BC2	FA002078	July 30/09	July 30/10
Log Periodic Antenna	Sunol	LP5	FA002077	July 23/09	July 23/10
Flush Mount Turntable	Sunol	FM2022	FA002082	NCR	NCR
Controller	Sunol	SC104V	FA002060	NCR	NCR
Mast	Sunol	TLT2	FA002061	NCR	NCR
LISN	Rohde & Schwarz	ENV216	FA002023	Sept. 02/09	Sept. 02/10
Receiver/Spectrum Analyzer	Rohde & Schwarz	ESU 26	FA002043	Dec. 16/08	Dec. 16/09
50 Coax cable	HUBER + SUHNER	None	FA002022	July 07/09	July 07/10
50 Coax cable	HUBER + SUHNER	None	FA002074	July 07/09	July 07/10
Horn Antenna #2	EMCO	3115	FA000825	Jan. 21/09	Jan. 21/10
18.0 – 40.0GHz Horn Antenna	EMCO	3116	FA001847	May 12/09	May 12/10
1 – 18 GHz Amplifier	JCA	JCA118-503	FA002091	Oct 2/08	Oct 2/09
18.0 – 26.0 GHz Amplifier	NARDA	BBS-1826N612	FA001550	COU	COU

COU – Calibrate on Use
NCR – No Calibration Required

Section 4 : Results Summary

This section contains the following:

FCC Part 22 Subpart H : Test Results
FCC Part 24 Subpart E : Test Results

The column headed 'Required' indicates whether the associated clauses were invoked for the apparatus under test. The following abbreviations are used:

N No : not applicable / not relevant.

Y Yes : Mandatory i.e. the apparatus shall conform to these tests.

N/T Not Tested, mandatory but not assessed. (See Report Summary)

4.1 FCC Part 22 Subpart H : Test Results

Clause	Test Method	Test Description	Required	Result
22.913(a) 22.917(a)	2.1046 2.1053	Effective Radiated Power Limits Field strength of spurious radiation	Y Y	PASS PASS

4.2 FCC Part 24 Subpart E : Test Results

Clause	Test Method	Test Description	Required	Result
24.232(c) 24.238(a)	2.1046 2.1053	EIRP Limits Field strength of spurious radiation	Y Y	PASS PASS

Note: Only partial tests were performed based on the original modular approval certification. The EUT has a custom antenna path and layout therefore fundamental and spurious emissions tests were performed.

Appendix A : Test Results

Clause 22.913(a) Effective Radiated Power Limits

(a) Maximum ERP. In general, the effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts (57 dBm). However, for those systems operating in areas more than 72 km (45 miles) from international borders that:
(1) Are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census; or,
(2) Extend coverage on a secondary basis into cellular unserved areas, as those areas are defined in §22.949, the ERP of base transmitters and cellular repeaters of such systems must not exceed 1000 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

Test Results: Pass

The EUT was performed conducted.
The test was performed using a spectrum analyzer with peak detector set to 10 MHz/10 MHz RBW/VBW.
Only the worst case is presented in the report.

GSM-850, GMSK modulation

Channel	Output power dBm	Antenna gain dBd	ERP dBm	Limit dBm	Margin dB
128	31.90	-0.15	31.75	38.00	6.25
200	30.77	-0.15	30.62	38.00	7.38
251	31.14	-0.15	30.99	38.00	7.01

GSM-850, 8-PSK modulation

Channel	Output power dBm	Antenna gain dBd	ERP dBm	Limit dBm	Margin dB
128	27.11	-0.15	26.96	38.00	11.04
200	26.97	-0.15	26.82	38.00	11.18
251	26.83	-0.15	26.68	38.00	11.32

WCDMA-850, UMTS

Channel	Output power dBm	Antenna gain dBd	ERP dBm	Limit dBm	Margin dB
4132	21.20	-0.15	21.05	38.00	16.95
4182	21.90	-0.15	21.75	38.00	16.25
4233	23.00	-0.15	22.85	38.00	15.15

Clause 22.917(a) Field Strength of spurious radiation

Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

Test Results: Pass

The spectrum was searched from 30 MHz to 10th harmonic of the highest fundamental frequency.
The EUT was tested radiated at the distance of 3 m.
The test was performed using a spectrum analyzer with peak detector set to 1 MHz/3 MHz RBW/VBW.
The EUT was scanned in 3 orthogonal positions.
Only the worst case is presented in the report.

No emissions were detected within 20 dB below the emission limit.

Clause 24.232(c) Effective Isotropic Radiated Power Limits

Mobile/portable stations are limited to 2 W EIRP peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

Test Results: Pass

The EUT was performed conducted.
The test was performed using a spectrum analyzer with peak detector set to 10 MHz/10 MHz RBW/VBW.
Only the worst case is presented in the report.

GSM-1900, GMSK modulation

Channel	Output power dBm	Antenna gain dBd	ERP dBm	Limit dBm	Margin dB
512	28.44	-0.15	28.29	33.00	6.71
661	28.48	-0.15	28.33	33.00	6.67
810	29.02	-0.15	28.87	33.00	6.13

GSM-1900, 8-PSK modulation

Channel	Output power dBm	Antenna gain dBd	ERP dBm	Limit dBm	Margin dB
512	26.19	-0.15	26.04	33.00	6.96
661	26.30	-0.15	26.15	33.00	6.85
810	25.78	-0.15	25.63	33.00	7.37

WCDMA-1900, UMTS

Channel	Output power dBm	Antenna gain dBd	ERP dBm	Limit dBm	Margin dB
9262	22.57	-0.15	22.42	33.00	10.58
9400	21.19	-0.15	21.04	33.00	11.96
9538	22.01	-0.15	21.86	33.00	11.14

Clause 24.238(a) Field Strength of spurious radiation

Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

Test Results: Pass

The spectrum was searched from 30 MHz to 10th harmonic of the highest fundamental frequency.
The EUT was tested radiated at the distance of 3 m.
The test was performed using a spectrum analyzer with peak detector set to 1 MHz/3 MHz RBW/VBW.
The EUT was scanned in 3 orthogonal positions.
Only the worst case is presented in the report.

No emissions were detected within 20 dB below the emission limit.

Appendix B : Photo and Block Diagram of Test Setups

Radiated Emissions Test Site