Nemko Test Report:	5L0526RUS2
Applicant:	Nokia, Inc.
Equipment Under Test: (E.U.T.)	6165i
FCC ID:	QMNRM-125
In Accordance With:	**FCC Part 15, Subpart C, 15.247** Frequency Hopping Transmitters
Tested By:	Nemko USA Inc. 802 N. Kealy Lewisville, Texas 75057-3136
Authorized By:	 Kevin Rose, Wireless Engineer
Date:	November 15, 2005

NVLAP LAB CODE: 100426-0
Accreditation valid 1/1/05 to 12/31/05

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Section 1. Summary of Test Results

Manufacturer: Nokia, Inc.

Model No.: 6165i

Serial No.: 033/10858381

Type: RM-125

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, Subpart C, Paragraph 15.247 for Frequency Hopping Spread Spectrum devices. Radiated tests were conducted is accordance with ANSI C63.4-2003. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC.

☒	New Submission	☐	Production Unit
☐	Class II Permissive Change	☒	Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.
See " Summary of Test Data".

NVLAP LAB CODE: 100426-0

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Summary Of Test Data

NAME OF TEST	PARA. NO.	RESULT
Powerline Conducted Emissions	15.207(a)	Complies
Channel Separation	15.247(a)(1)	Not Tested
Pseudorandom Hopping Algorithm	15.247(a)(1)	Not Tested
Time of Occupancy	15.247(a)(1)(ii)	Not Tested
20 dB Occupied Bandwidth	15.247(a)(1)	Not Tested
Peak Power Output	15.247(b)	Complies
Spurious Emissions (Antenna Conducted)	15.247(c)	Not Tested
Spurious Emissions (Radiated)	15.247(c)	Complies

Footnotes: Items marked as "Not Tested" were tested by Nokia

Section 2. Equipment Under Test (E.U.T.)

General Equipment Information

Frequency Band:	2402 to 2480 MHz
Number of Channels:	79
Channel Spacing:	1 MHz
User Frequency Adjustment:	Software controlled

Section 3. Powerline Conducted Emissions

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207(a)
TESTED BY: David Light	DATE: 11/3/2005

Test Results: Complies.

Measurement Data: See attached plots.

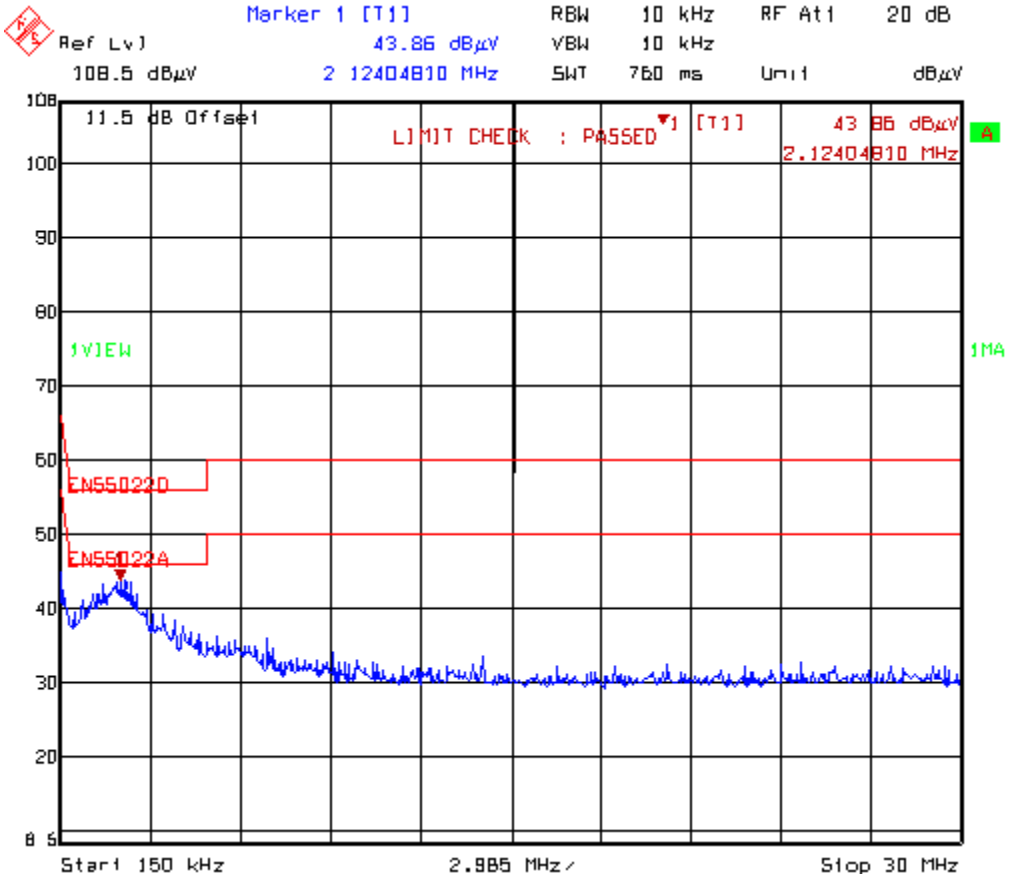
Equipment Used: 1258-1433-1534-674-1036

Measurement Uncertainty: +/- 1.7 dB

Temperature: 22 °C

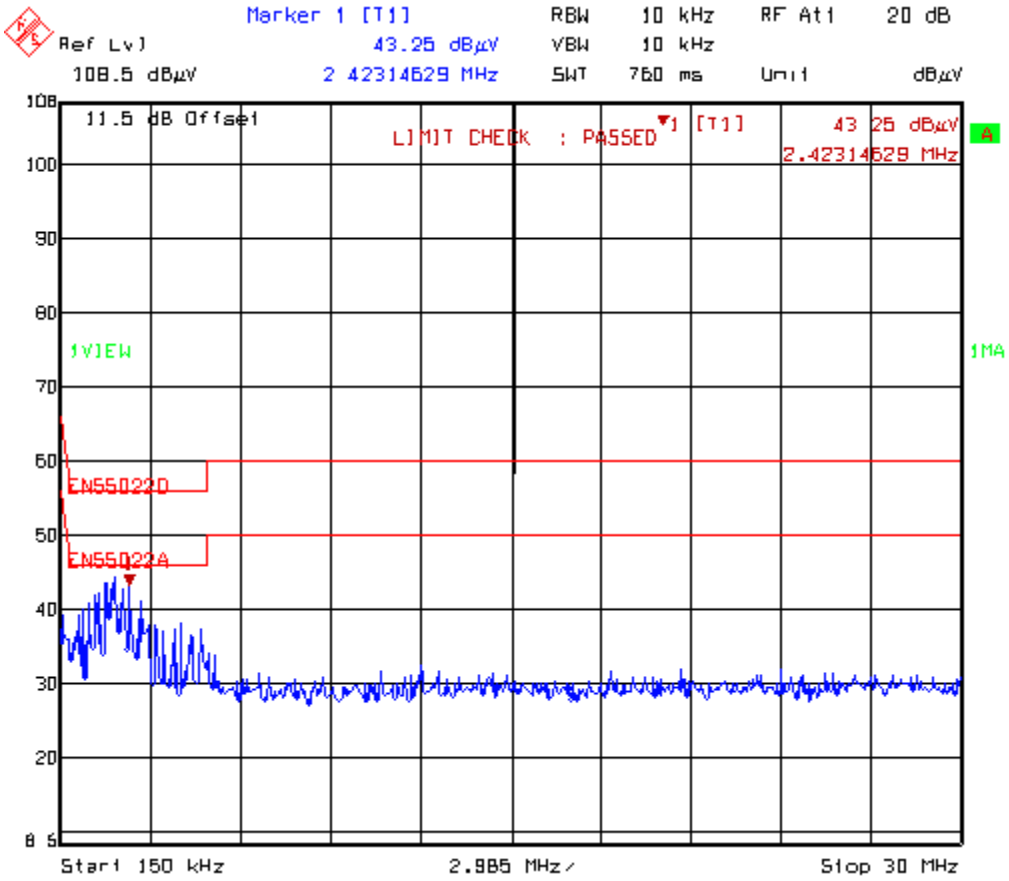
Relative Humidity: 45 %

Test Data – Powerline Conducted Emissions



Line

Test Data – Powerline Conducted Emissions



Neutral

Test Setup Photos

Section 4. EIRP

NAME OF TEST: EIRP	PARA. NO.: 15.247(b)(3)
TESTED BY: David Light	DATE: 11/15/2005

Test Results: Complies.

Equipment Used: 1484-1485-1464-993

Measurement Uncertainty: +/- 1.7 dB

Temperature: 20 °C

Relative Humidity: 30 %

The handset was tested on three orthogonal axis'.

Test Data – EIRP

Field Strength of Spurious Emissions

Page 1 of 1 Complete X
Job No.: 5L0526 Date: 11/15/05 Preliminary
Specification: 15.247 Temperature(°C): 20
Tested By: David Light Relative Humidity(%) 30
E.U.T.: Tri-mode/Bluetooth handset
Configuration: Tx BT
Sample No: 1
Location: AC 3 RBW: 1 MHz Measurement
Detector Type: Peak VBW: 1 MHz Distance: 3 m

Test Equipment Used

Antenna: 993 Directional Coupler:
Pre-Amp: Cable #1: 1484
Filter: Cable #2: 1485
Receiver: 1464 Cable #3:
Attenuator #1 Cable #4:
Attenuator #2: Mixer:
Additional equipment used:
Measurement Uncertainty: +/-1.7 dB

Frequency (MHz)	Meter Reading (dBm)	Correction Factor (dB)		Pre-Amp Gain (dB)	Substitution Antenna Gain (dBi)		EIRP (dBm)	EIRP (mW)	Polarity	Comments
2480	-45.2	34.9			7.8		-2.5	0.5675	V	
2480	-50.5	36.8			5.6		-8.1	0.1563	H	
2440	-44.2	34.9			7.8		-1.5	0.7145	V	
2440	-53.2	36.8			5.6		-10.8	0.0839	H	
2402	-44.8	34.9			7.8		-2.1	0.6223	V	
2402	-53.8	36.8			5.6		-11.4	0.0731	H	

Notes:

Section 5. Spurious Emissions (Radiated)

NAME OF TEST: Spurious Emissions (Radiated)	PARA. NO.: 15.247(c)
TESTED BY: David Light	DATE: 11/3/2005

Test Results: Complies.

Measurement Data: There were no emissions detected above the noise floor which is at least 20 dB below the specification limit of 74 dBµV/m. Peak or 54 dBµV/m Average. 1 MHz RBW/VBW for peak readings, 1 MHz RBW/1 MHz VBW with duty cycle correction was used for average measurement.

The worst case emission was 50 dBµV/m. at 2483.5 MHz in the horizontal polarity with the handset transmitting at 2480 MHz.

Duty Cycle Calculation:

Duty Cycle correction factor(dB) = 20 log (rf_{ON} in ms/100ms)

Equipment Used: 1484-1485-1464-1016-993

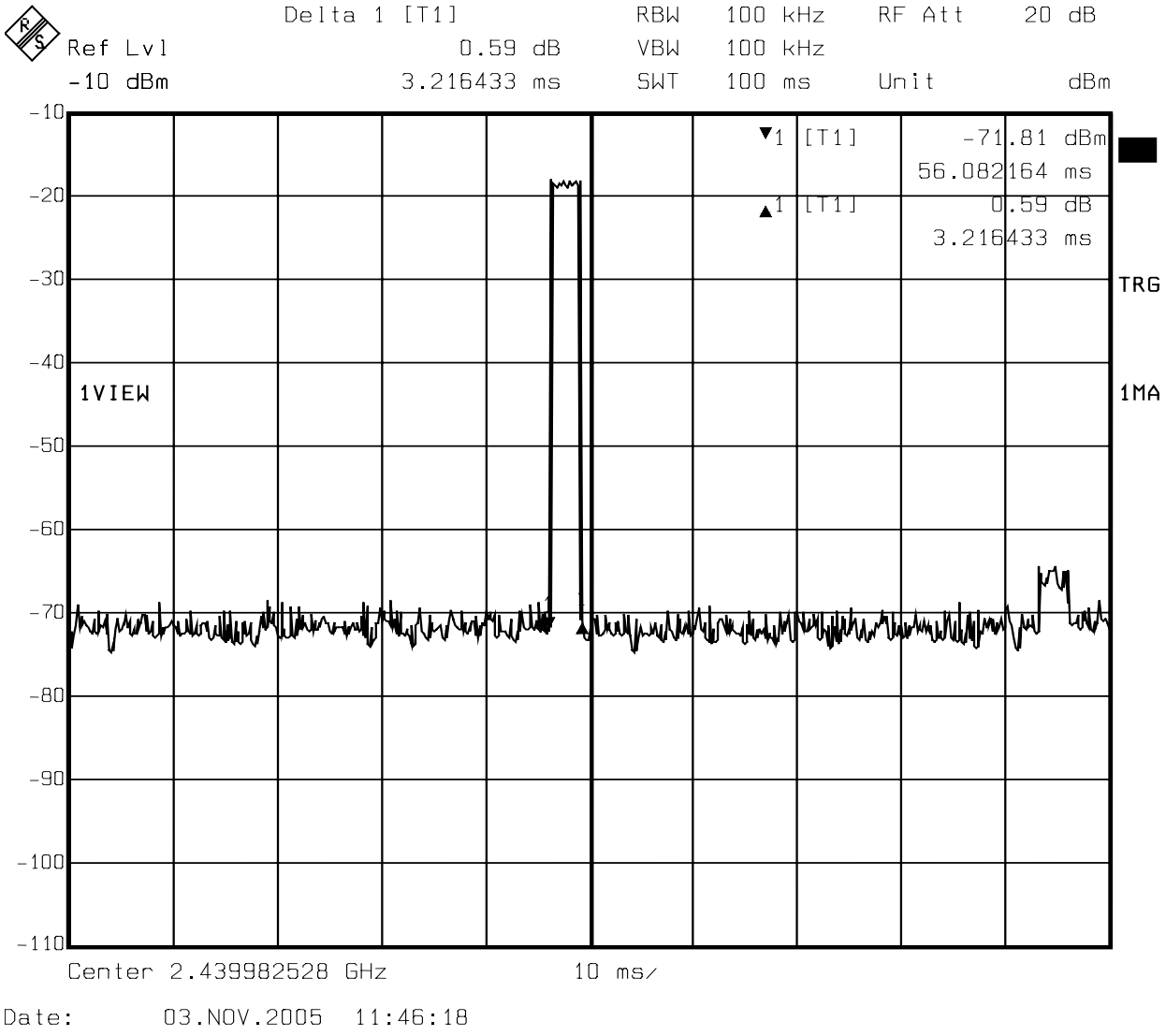
Measurement Uncertainty: +/- 3.7 dB

Temperature: 22 °C

Relative Humidity: 45 %

The handset was tested on three orthogonal axis'.

Test Data – Duty Cycle (Normal Hop Mode)



Duty cycle correction = 20 $\log_{10}$ (Time On mS/100 mS)

20 $\log_{10}$ (6.22/100) = -29.8 dB

Radiated Photographs

Section 6. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	09/15/05	09/15/06
1485	Cable 2.0-18.0 Ghz	Storm PR90-010-216	N/A	09/15/05	09/15/06
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	01/14/05	01/15/07
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	11/12/04	11/12/05
993	Horn antenna	A.H. Systems SAS-200/571	XXX	08/01/05	08/02/07
1258	LISN .15mhz-30mhz	EMCO 0	1305	11/17/04	11/17/05
1433	High pass filter	Solar 7930-5.0	933142	09/07/05	09/07/06
1534	CABLE, 9M	KTL RG223	NA	08/10/05	08/10/06
674	LIMITER	HP 11947A	3107A02200	CBU	CBU
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	03/22/04	03/23/06

ANNEX A - TEST DETAILS

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207(a)

Specification Limits:

Limits for conducted disturbance at the mains ports

Frequency Range (MHz)	Quasi-peak Limits (dBuV)	Average Limits (dBuV)
0.15 to 0.50	66-56	56-46
0.50 to 5.00	56	46
5.00-30.0	60	50
The limit decreases with the logarithm of the frequency in the range 0.15MHz to 0.5 MHz		

Method of Measurement (Procedure ANSI C63.4-2003):

Measurements were made using a spectrum analyzer with 10 kHz RBW, Peak detector. Any emissions that are close to the limit are measured using a test receiver with 9 or 10 kHz bandwidth, CISPR Quasi-Peak detector.

NAME OF TEST: Radiated Spurious Emissions PARA. NO.: 15.247(c)

Minimum Standard: In any 100kHz bandwidth outside the frequency band in which the transmitter is operating, emissions shall be at least 20 dB below the fundamental emission or shall not exceed the following field strength limits:

Emissions falling in the restricted bands of 15.205 shall not exceed the following field strength limits:

Frequency (MHz)	Field Strength (μV/m @ 3m)	Field Strength (dB @ 3m)
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

THE SPECTRUM WAS SEARCHED TO THE 10th HARMONIC

15.205 Restricted Bands

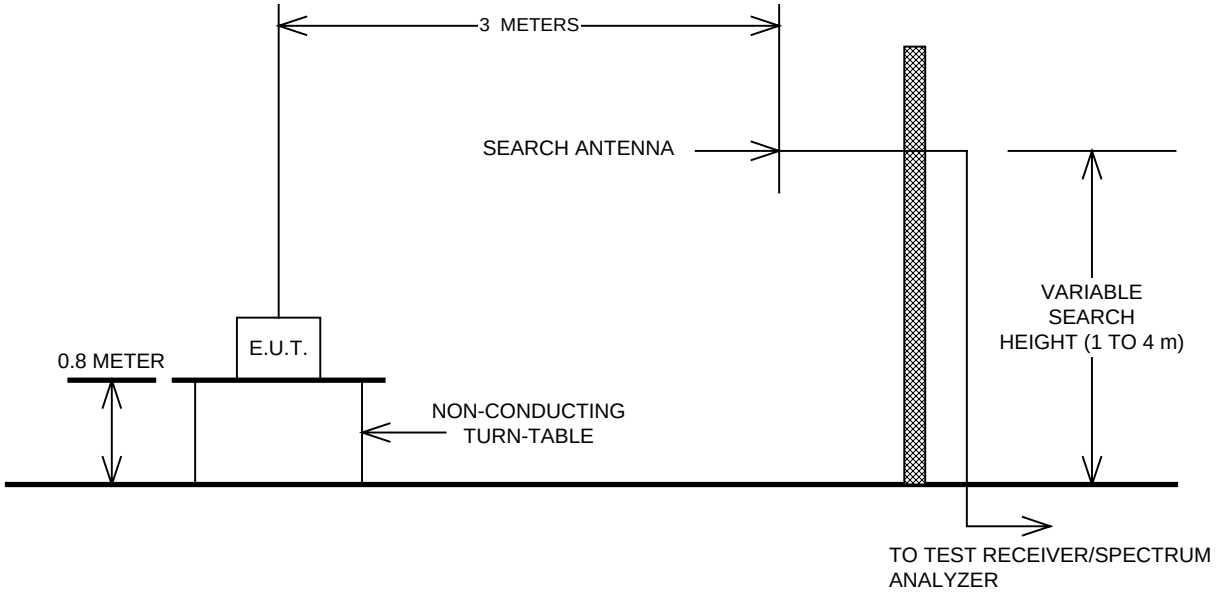
MHz	MHz	MHz	GHz
0.09-0.11	16.42-16.423	399.9-410	4.5-5.25
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.125-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41	1718		

Number of channels tested:

Tuning range	Number of channels tested	Channel location in band
1 MHz or less	1	middle
1 to 10 MHz	2	top and bottom
more than 10 MHz	3	top, middle, bottom

ANNEX B - TEST DIAGRAMS

Test Site For Radiated Emissions



Conducted Emissions