



Phone (858) 755-5525 Fax (858) 452-1810 11696 Sorrento Valley Rd., Suite F San Diego, CA 92121-1024

Test Report: 2005 110898-FCC2

Applicant: Sendum Wireless Corporation

4500 Beedie Street Burnaby, BC Canada V5J 5L2 Phone: 604 438 6451 Fax: 604 437 5726

Apparatus: OM200

FCC ID: TS5-6050M-OM200

In Accordance With: FCC Part 22, Subpart H

Public Mobile Services

RSS-129, Issue 2

800MHz Dual-Mode CDMA Cellular Telephones

FCC Part 24, Subpart E RSS-133, Issue 2, Rev.1

2GHz Personal Communications Services

Tested By: Nemko USA

Project Number: 25-898-SEN

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Nemko USA REPORT SUMMARY

FCC ID:TS5-6050M-OM200

Report Number: **2005 110898-FCC2**Specification: FCC Part 22 & 24

Report Summary

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 22. Conducted measurements were performed in accordance with ANSI TIA-603-B-2002. 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.

The assessment summary is as follows:

Apparatus Assessed: OM200

Specification: FCC Part 22 Public Mobile Services

FCC Part 24, Subpart E

RSS-129, Issue 2 RSS-133, Issue 2

Compliance Status: Complies

Exclusions: None

Non-compliances: None

Report Release History:

REVISION	DATE	COMMENTS		
-	11-10-05	Prepared By:	A. Laudani	
-		Initial Release:	Chip Fleury	

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.

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Specification: FCC Part 22 & 24

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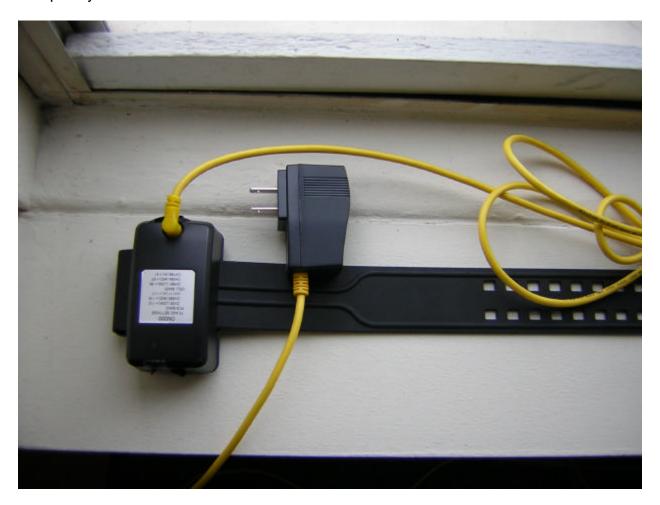
SECTION 1: EQUIPMENT UNDER TEST

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Section 1: Equipment Under Test

1.1 Product Identification

The Equipment Under Test was identified as follows: Temporary label on underside of device



SECTION 1: EQUIPMENT UNDER TEST

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1.2 Samples Submitted for Assessment

The following samples of the apparatus have been submitted for type assessment:

Sample No.	Description	Serial No.
001	PT200* modified with pigtail for conducted measurements	NA
002	OM200 with charger for Radiated Measurements Charger keeps battery fully charged for test	NA

^{*} PT200 contains the same radio circuitry as the DS500

OM200 PS/CHARGER SPS-0441000-NA 100-240 Vac 50/60 HZ 180 mA → 4.4 Vdc 1A

The first samples were received on: 10 November 2005

1.3 Theory of Operation

The device uses GPS technology to encode its location, which is transmitted via CDMA or PCS wireless telephony to keep track of the internee it is strapped to.

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SECTION 1: EQUIPMENT UNDER TEST

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1.4 Technical Specifications of the EUT

Manufacturer: Sendum Wireless

Operating Frequency: 836.51 to 848.97 MHz,

1851.25 to 1908.75 MHz

Emission Designator: 1M28F9W

Rated Power: 24.0 dBm

Measured Power: 23.7 dBm

Modulation: CDMA Cellular, CDMA PCS

Power Source: 4.6 V lithium battery

Antenna Gain: Internal Integral Circuit.

1.5 Block Diagram of the EUT

See Block diagram exhibit

SECTION 2: TEST CONDITIONS

Report Number: **2005 110898-FCC2** Specification: FCC Part 22 & 24

Section 2: Test Conditions

2.1 Specifications

The apparatus was assessed against the following specifications:

FCC Part 22, Subpart H Public Mobile Services

RSS-129, Issue 2 800MHz Dual-Mode CDMA Cellular Telephones

FCC Part 24, Subpart E Personal Communications Services

RSS-133, Issue 2, Rev.1 2GHz Personal Communications Services

2.2 Deviations From Laboratory Test Procedures

No deviations were made from laboratory test procedures.

2.3 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

2.4 Test Equipment

Asset Number	Description	Model Number	Serial Number	Last Cal	Cal Due
101L	Signal Generator, Gigatronics	900	317101	10/5/05	10/5/06
835	Spectrum Analyzer, Rhode & Schwartz	RHDFSEK	829058/005	12/30/04	12/30/05
842	Preamp	Nemko	na	verified	10/8/05
752	Antenna, DRWG, EMCO	3115	4943	12/29/04	12/29/05
529	Antenna, DRWG, EMCO	3115	2505	4/13/05	4/13/06
112	Antenna, LPA, EMCO	3146	9101-2988	10/28/04	10/28/05
759	Antenna Set, Dipole, EMCO	3121C	1214	1/28/05	1/28/06
529	Antenna, DRWG, EMCO	3115	2505	4/13/05	4/13/06
836	Signal Generator, Agilent	E8254A	US41140229	12/30/04	12/30/05
759	Antenna Dipole, Part of Set 760	3121C-DB4	9609-1214	12/30/04	12/30/05
149	Cincinati Environmental Chamber	Plus 32	AP0552665	5/13/05	5/13/06

SECTION 3: OBSERVATIONS

Report Number: **2005 110898-FCC2**Specification: FCC Part 22 & 24

Section 3: Observations

3.1 Modifications Performed During Assessment

No modifications were performed during assessment.

3.2 Record Of Technical Judgements

Conductive measurements were performed on the model PT200 which contains the same Rf circuitry as the OM200. A coax, sma pigtail was soldered into the circuitry between the final RF stage and the integral antenna.

3.3 EUT Parameters Affecting Compliance

The user of the apparatus could not alter parameters that would affect compliance.

3.4 Test Deleted

No Tests were deleted from this assessment.

3.5 Additional Observations

There were no additional observations made during this assessment.

SECTION 4: RESULTS SUMMARY Report Number: 2005 110898-FCC2

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Section 4: Results Summary

This section contains the following:

The results contained in this section are representative of the operation of the apparatus as originally submitted.

FCC Part 22: Test Results

Clause	Test Method	Test Description	Required	Result
22.355 22.913 22.917 22.917 22.905	2.1055 2.1046 2.1051 2.1053 2.1049	Frequency stability Output power Conducted spurious emissions Radiated spurious emissions Occupied bandwidth		PASS PASS PASS PASS PASS

Part 24: Test Results

Clause	Test Method	Test Description	Required	Result
24.235 24.232 24.238 24.236 24.238	2.1055 2.1046 2.1051 2.1053 2.1049	Frequency stability Output power Conducted spurious emissions Radiated spurious emissions Occupied bandwidth		PASS PASS PASS PASS PASS

Notes:

APPENDIX A: TEST RESULTS

Report Number: **2005 110898-FCC2** Specification: FCC Part 22 & 24

Appendix A: Test Results

Frequency Stability

22.355

Except as otherwise provided in this part, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table C-1 of this section.

Table C-1. - Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency	Base,	Mobile	Mobile
range	fixed	>3	<=3
(MHz)	(ppm)	watts (ppm)	watts (ppm)
25 to 50		20.0 20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929	5.0	n/a	n/a
929 to 960	1.5	n/a	n/a
2110 to 2220	10.0	n/a	n/a

Sec. 24.235 Frequency stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

The fundamental frequency emissions did not stray outside the designated band 1850 to 1909 MHz during all testing within this report.

The fundamental frequency emissions did not stray outside the designated band 1850 to 1909 MHz during all testing within this report. See Appendix B for bandedge plots from –30 °C to + 50 °C step 10°.

Test Conditions:

Sample Number:	001	Temperature:	24 °C
Date:	11-8-05	Humidity:	31 %
Modification State:	CW	Tester:	A. Laudani
		Laboratory:	Nemko

Test Results: See Attached Table.

Testing procedure for 22.355:

Frequency stability measurements were made over the temperature range of -30°C to +50°C. Climatic control was accomplished using a temperature chamber. The temperature was first increased from 20C to 50C in 10C increments and then lowered to -50C and incremented back to 20C. The unit remained in the chamber during temperature transitions and during the measurement process.

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Voltage Nominal 4.3 V

	Frequency center	Freq.difference
Temperature(°C)		
20	836.519839	0
30	836.519839	0
40	836.519839	0
50	836.520160	-321
-30	836.520751	-912
-20	836.520751	-912
-10	836.520751	-912
0	836.520160	-321
10	836 520160	-321

836.52 MHz 2.5 ppm 2091.3 Hz -- Limit

Voltage 85% 3.66 V

Voltage 1.15% 4.94 V

Temperature(°C)	Frequency center	Freq.difference	Temperature(°C)	Frequency center	Freq.difference
20	836.519839	0	20	836.519839	0
30	836.519839	0	30	836.519839	0
40	836.519839	0	40	836.519839	0
50	836.520160	-321	50	836.520160	-321
-30	836.520751	-912	-30	836.520751	-912
-20	836.520751	-912	-20	836.520751	-912
-10	836.520751	-912	-10	836.520751	-912
0	836.520160	-321	0	836.520160	-321
10	836.520160	-321	10	836.520160	-321

Volts	Frequency center	Freq.difference	Output power
			dBm
4.6	836.520160	0	22.3
4.4	836.520160	0	22.2
4.2	836.520160	0	22.1
4.1	836.520160	0	21.7
4.0	836.520160	0	20.9
3.9	836.520160	0	22.4
3.7	836.520160	0	20.4
3.6	off		off

APPENDIX A: TEST RESULTS
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Output Power

Clause 22.913

Para. No. 22.913(a). The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts

Clause 24.232

Para. No.: 24.232. (b) Mobile/portable stations are limited to 2 watts E.I.R.P. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

Test Summary: Radiated

Modulation	Frequency (MHz)	ERP/EIRP Measured (dBm)	Substituted (dBm)	Result Watts
CDMA	824.70	26.9	23.7	0.23
	836.52	25.8	23.2	0.21
	848.31	26.5	23.6	0.23
PCS	1851.25	23.2	21.7	0.15
	1880.00	24.7	23.1	0.20
	1908.75	24.0	21.8	0.15

Tables below.

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APPENDIX A: TEST RESULTS

Report Number: **2005 110898-FCC2**Specification: FCC Part 22 & 24

				R	Radiated Emission	15 Dala					
Complete Preliminar	у	YES					Job # :		SEN 1		2
Client Nam	ne :	Sendum Wi	reless Co	rporation						_	
EUT Name	e :	OM200									
EUT Mode	el # :	ÔM200									
EUT Part #											
EUT Seria											
EUT Confi		Transmit C\									
Specificati		FCC Part 2					Refere	nce :			
Bicon Ant.		NA_		Temp. (°C):	19				Date:	11/9/2005	
og Ant.#:		110		Humidity (%):	61				Time :		
ORG Ant.		529		EUT Voltage:	120 Vac				Staff:		
Dipole Ant	.#:	NA_		EUT Frequency:			_		oto ID:		
										· 1 MHz	
Cable#:		40ft		Phase:	1			eak Ban			
Preamp#:		842		Location:	SOATS					1 MHz	
Preamp#: Spec An.#	:	842 835									
Preamp#: Spec An.# QP #:		842 835 NA		Location:	SOATS						
Preamp#: Spec An.#		842 835		Location:	SOATS						
Preamp#: Spec An.# QP #:		842 835 NA		Location:	SOATS	Margin					
Preamp#: Spec An.# QP #: PreSelect#	# :	842 835 NA NA		Location: Distance:	SOATS 3M	Margin dB	V	ideo Bai	ndwidth		
Preamp#: Spec An.# QP #: PreSelect#	#: Vertical	842 835 NA NA Horizontal		Location: Distance: Max Level	SOATS 3M Spec. Limit	-	V EUT	ideo Bai	Pass Fail		
Preamp#: Spec An.# QP #: PreSelect# Meas. Freq. (MHz)	Vertical (dBuV) pk	842 835 NA NA Horizontal (dBuV) pk	CF (db)	Location: Distance: Max Level (dBm) pk	SOATS 3M Spec. Limit (dBm) pk	dB pk	EUT Rotation	Ant. Height	Pass Fail Unc.	1 MHz	
Preamp#: Spec An.# QP #: PreSelect# Meas. Freq.	#: Vertical (dBuV)	842 835 NA NA Horizontal (dBuV)		Location: Distance: Max Level (dBm)	SOATS 3M Spec. Limit (dBm)	dB	V EUT	ideo Bai	Pass Fail	1 MHz	
Preamp#: Spec An.# QP #: PreSelect# Meas. Freq. (MHz)	Vertical (dBuV) pk	842 835 NA NA Horizontal (dBuV) pk	CF (db)	Max Level (dBm) pk 23.2	Spec. Limit (dBm) pk	dB pk -15.4	EUT Rotation	Ant. Height	Pass Fail Unc.	1 MHz	
Preamp#: Spec An.# QP #: PreSelect# Meas. Freq. (MHz) 1851.25	Vertical (dBuV) pk 84.9 86.4	842 835 NA NA Horizontal (dBuV) pk 83.3	CF (db) 35.7 35.7	Max Level (dBm) pk 23.2 24.7	Spec. Limit (dBm) pk 33.0 33.0	dB pk -15.4 -13.8	EUT Rotation	Ant. Height	Pass Fail Unc. Pass	1 MHz	
Preamp#: Spec An.# QP #: PreSelect# Meas. Freq. (MHz)	Vertical (dBuV) pk	842 835 NA NA Horizontal (dBuV) pk	CF (db)	Max Level (dBm) pk 23.2	Spec. Limit (dBm) pk	dB pk -15.4	EUT Rotation	Ant. Height	Pass Fail Unc.	1 MHz	
Preamp#: Spec An.# QP #: PreSelect# Meas. Freq. (MHz) 1851.25	Vertical (dBuV) pk 84.9 86.4	842 835 NA NA Horizontal (dBuV) pk 83.3	CF (db) 35.7 35.7	Max Level (dBm) pk 23.2 24.7	Spec. Limit (dBm) pk 33.0 33.0	dB pk -15.4 -13.8	EUT Rotation	Ant. Height	Pass Fail Unc. Pass	1 MHz	
Preamp#: Spec An.# QP #: PreSelect# Meas. Freq. (MHz) 1851.25	Vertical (dBuV) pk 84.9 86.4	842 835 NA NA Horizontal (dBuV) pk 83.3	CF (db) 35.7 35.7	Max Level (dBm) pk 23.2 24.7	Spec. Limit (dBm) pk 33.0 33.0	dB pk -15.4 -13.8	EUT Rotation	Ant. Height	Pass Fail Unc. Pass	1 MHz	
Preamp#: Spec An.# QP #: PreSelect# Meas. Freq. (MHz) 1851.25	Vertical (dBuV) pk 84.9 86.4	842 835 NA NA Horizontal (dBuV) pk 83.3	CF (db) 35.7 35.7	Max Level (dBm) pk 23.2 24.7	Spec. Limit (dBm) pk 33.0 33.0	dB pk -15.4 -13.8	EUT Rotation	Ant. Height	Pass Fail Unc. Pass	1 MHz	
Preamp#: Spec An.# QP #: PreSelect# Meas. Freq. (MHz) 1851.25	Vertical (dBuV) pk 84.9 86.4	842 835 NA NA Horizontal (dBuV) pk 83.3	CF (db) 35.7 35.7	Max Level (dBm) pk 23.2 24.7	Spec. Limit (dBm) pk 33.0 33.0	dB pk -15.4 -13.8	EUT Rotation	Ant. Height	Pass Fail Unc. Pass	1 MHz	

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APPENDIX A: TEST RESULTS

Report Number: **2005 110898-FCC2** Specification: FCC Part 22 & 24

				ı	Radiated Emissio	ns Data					
Complete Preliminar		YES					Job # :		-SEN 1		1
Client Nar	ne:	Sendum Wii	reless Co	rporation				J			
EUT Nam	e:	OM200		•							
EUT Mode	el # :	0M200									
EUT Part	#:										
EUT Seria	al#:										
EUT Conf		Transmit CV									
Specificati		FCC Part 22					Refere	ence :			
Bicon Ant.		NA_		Temp. (°C):	19				Date :		
Log Ant.#:		110		Humidity (%):	61				THIT .		
DRG Ant.		529		EUT Voltage :	120 Vac			-	Stail:		
Dipole Ant	t.#:	NA		EUT Frequency			_		noto ID:		
Cable#:		SOATS		Phase:	1			eak Ban			
Preamp#: Spec An.#		842 835		Location: Distance:	SOATS 3M		V	ideo Baı	nawiatr	1 MHZ	
QP #:	<i>t</i> .	NA		Distance.	SIVI						
QF#. PreSelect	#•	NA NA									
1 10001001	π.	INA									
Meas.	Vertical	Horizontal	1 1	Max Level	Spec. Limit	Margin	EUT	Ant.	Pass	1	
	1		CF (db)	Max Level		Margin dB	EUT Rotation		Pass Fail		
Meas.	Vertical	Horizontal	CF (db)		Spec. Limit (dBm) pk	-			Fail	Commen	
Meas. Freq. (MHz)	Vertical (dBuV)	Horizontal (dBuV)	CF (db)	(dBm)	(dBm)	dB			Fail	Commen	
Meas. Freq.	Vertical (dBuV)	Horizontal (dBuV)	CF (db)	(dBm)	(dBm)	dB			Fail	Commen	
Meas. Freq. (MHz) 824.70	Vertical (dBuV) pk	Horizontal (dBuV) pk	30.9	(dBm) pk 26.9	(dBm) pk 33.0	dB pk -6.1	Rotation 20	Height	Fail Unc. Pass		
Meas. Freq. (MHz)	Vertical (dBuV) pk	Horizontal (dBuV) pk		(dBm) pk	(dBm) pk	dB pk	Rotation	Height	Fail Unc.		
Meas. Freq. (MHz) 824.70	Vertical (dBuV) pk 92.1	Horizontal (dBuV) pk 93.4 92.5	30.9	(dBm) pk 26.9 25.8	(dBm) pk 33.0	dB pk -6.1 -5.5	Rotation 20 20	1.0 1.0	Fail Unc. Pass Pass		
Meas. Freq. (MHz)	Vertical (dBuV) pk	Horizontal (dBuV) pk	30.9	(dBm) pk 26.9	(dBm) pk 33.0	dB pk -6.1	Rotation 20	Height	Fail Unc. Pass		
Meas. Freq. (MHz) 824.70	Vertical (dBuV) pk 92.1	Horizontal (dBuV) pk 93.4 92.5	30.9	(dBm) pk 26.9 25.8	(dBm) pk 33.0	dB pk -6.1 -5.5	Rotation 20 20	1.0 1.0	Fail Unc. Pass Pass		
Meas. Freq. (MHz) 824.70	Vertical (dBuV) pk 92.1	Horizontal (dBuV) pk 93.4 92.5	30.9	(dBm) pk 26.9 25.8	(dBm) pk 33.0	dB pk -6.1 -5.5	Rotation 20 20	1.0 1.0	Fail Unc. Pass Pass		
Meas. Freq. (MHz) 824.70	Vertical (dBuV) pk 92.1	Horizontal (dBuV) pk 93.4 92.5	30.9	(dBm) pk 26.9 25.8	(dBm) pk 33.0	dB pk -6.1 -5.5	Rotation 20 20	1.0 1.0	Fail Unc. Pass Pass		
Meas. Freq. (MHz) 824.70	Vertical (dBuV) pk 92.1	Horizontal (dBuV) pk 93.4 92.5	30.9	(dBm) pk 26.9 25.8	(dBm) pk 33.0	dB pk -6.1 -5.5	Rotation 20 20	1.0 1.0	Fail Unc. Pass Pass		
Meas. Freq. (MHz) 824.70	Vertical (dBuV) pk 92.1	Horizontal (dBuV) pk 93.4 92.5	30.9	(dBm) pk 26.9 25.8	(dBm) pk 33.0	dB pk -6.1 -5.5	Rotation 20 20	1.0 1.0	Fail Unc. Pass Pass		
Meas. Freq. (MHz) 824.70	Vertical (dBuV) pk 92.1	Horizontal (dBuV) pk 93.4 92.5	30.9	(dBm) pk 26.9 25.8	(dBm) pk 33.0	dB pk -6.1 -5.5	Rotation 20 20	1.0 1.0	Fail Unc. Pass Pass		

APPENDIX A: TEST RESULTS

Report Number: **2005 110898-FCC2**Specification: FCC Part 22 & 24

Substitution Method For Radiated Emissions

Complete Preliminary	,	Yes	<u>-</u> -			Job # : Page	25-898-SEN 1	Test # : of	3 1
Client Name EUT Name EUT Mode EUT Part #	:: #:	Sendum W OM200 OM200	Vireless Cor	rporation					
EUT Serial EUT Config		Transmit							
Specification Rod. Ant. # Bicon Ant. # Log Ant. # DRG Ant. # DRG Ant. # Dipole Ant. Cable#: Preamp#: Spec An. #: Signal Gen.	t: #: # # #:	FCC Part 2 NA NA 110 752 529 759 10ft NA 835 836	22 & Part 2: Temp. (de Humidity (EUT Volta EUT Frequ Phase: Location: Distance:	g. C) : %) : ge :	19 61 120 Vac 60 Hz 1 SOATS 3m	- - - - -	Reference : Date : Time : Staff : Photo II Peak Bandwidt	11/10/2005 A. Laudani D: h: RBW-1MHz, VB	W-1MHz
tar Frequency mHz	get level dBuV/m	dipole	cable loss dB	Signal Generator dBm	Total (EIRP) dBm			Watts	
824.70 836.49 848.31	93.4 92.5 92.9	0 0 0	0.8 0.9 0.9	24.50 24.10 24.50	23.70 23.20 23.60			0.23 0.21 0.23	
tar Frequency mHz	get level dBuV/m	Horn Gain dBi	cable loss dB	Signal Generator dBm	Total (EIRP) dBm				
1851.31 1880.00 1908.75	84.9 86.4 85.7	9.24 8.95 8.67	1.2 1.3 1.3	13.70 15.40 14.40	21.74 23.05 21.77			0.15 0.20 0.15	

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APPENDIX A: TEST RESULTS
Report Number: 2005 110898-FCC2

Specification: FCC Part 22 & 24

Conducted Output Power:

Test Conditions:

Sample Number:	001	Temperature:	22°C
Date:	12-5-05	Humidity:	29%
Modification State:	CW	Tester:	A. Laudani
		Laboratory:	Nemko SOATS

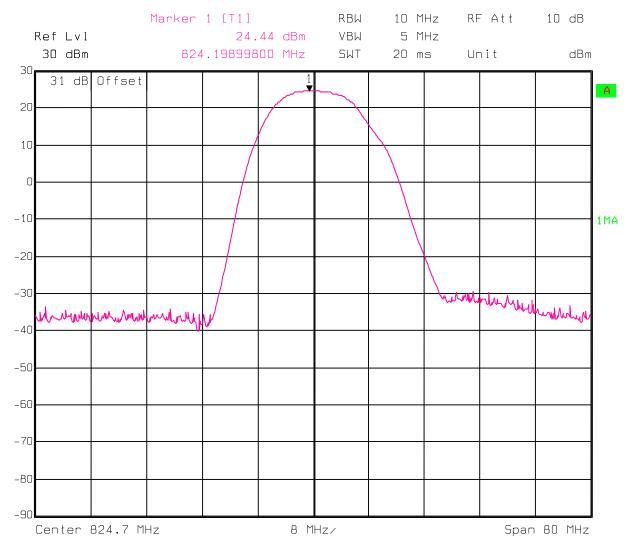
Equipment: Spectrum Analyzer 835, with 30 dB Attenuator.

Modulation	Frequency (MHz)	Measured (dBm)	Ant. Gain	Total ERP/EIRP	Result Watts
CDMA	824.70	24.4	-1.0	23.4	0.22
	836.52	24.0	-1.0	23.0	0.20
	848.31	24.3	-1.0	23.3	0.21
PCS	1851.25	24.2	-0.5	23.7	0.23
	1878	24.0	-0.5	23.5	0.22
	1908.75	24.3	-0.5	23.8	0.24

APPENDIX A: TEST RESULTS

Report Number: **2005 110898-FCC2**Specification: FCC Part 22 & 24

Part 22 Low Frequency Output Power



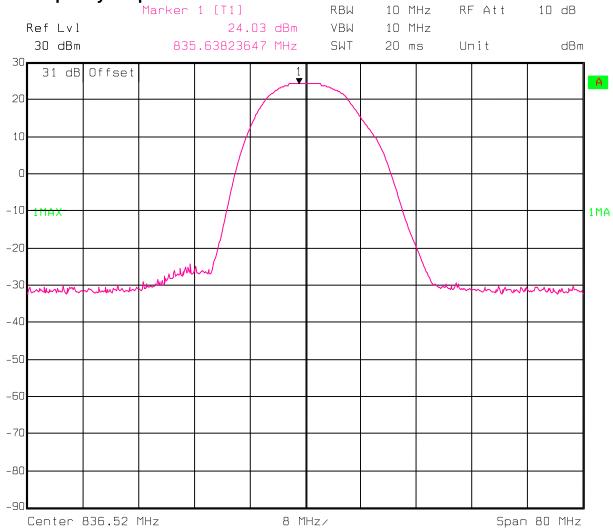
Date: 05.DEC.2005 13:33:32

Report Number: 2005 110898-FCC2

Specification: FCC Part 22 & 24

FCC ID:TS5-6050M-OM200

Mid Frequency Output Power

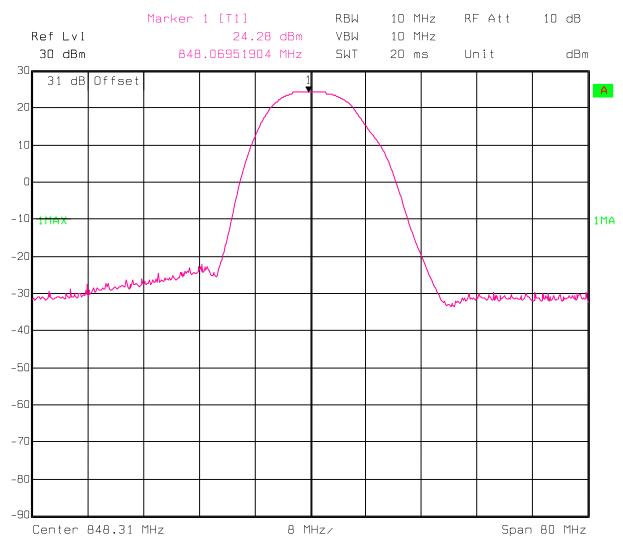


Date: 05.DEC.2005 13:49:03

Specification: FCC Part 22 & 24 FCC ID:TS5-6050M-OM200

Report Number: 2005 110898-FCC2

High Frequency Output Power

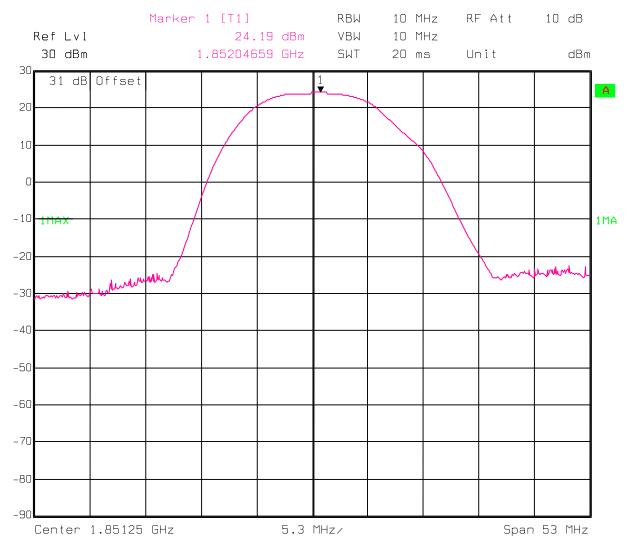


05.DEC.2005 13:52:00 Date:

APPENDIX A: TEST RESULTS

Report Number: **2005 110898-FCC2**Specification: FCC Part 22 & 24

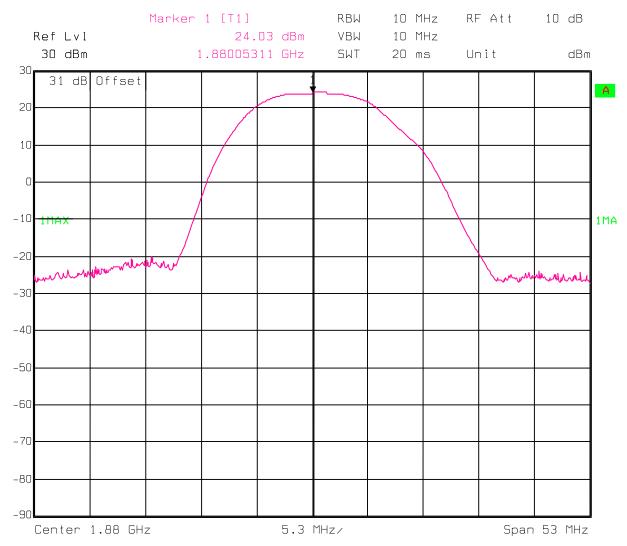
Part 24 Low Frequency Output Power



Date: 05.DEC.2005 14:59:18

Report Number: **2005 110898-FCC2**Specification: FCC Part 22 & 24

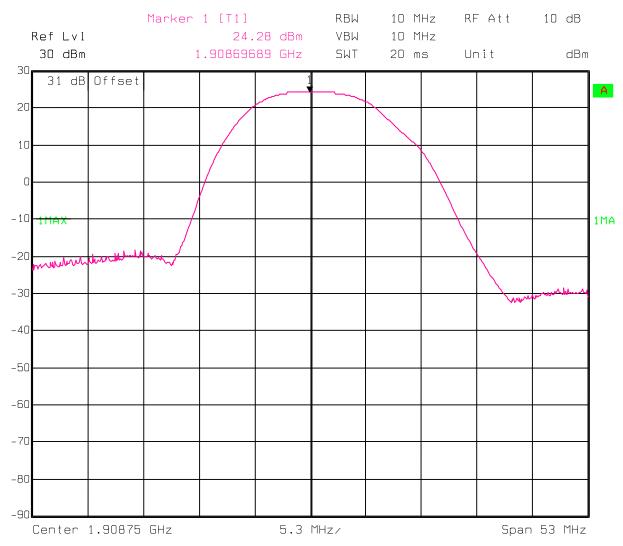
Mid Frequency Output Power



Date: 05.DEC.2005 15:01:26

Report Number: **2005 110898-FCC2** Specification: FCC Part 22 & 24

High Frequency Output Power



Date: 05.DEC.2005 15:05:36

Nemko USA APPENDIX A: TEST RESULTS

FCC ID:TS5-6050M-OM200

Specification: FCC Part 22 & 24

Report Number: 2005 110898-FCC2

Conducted Spurious Emissions

22.917

a) 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 Conditions:

Sample Number:	001	Temperature:	24 °C
Date:	11-8-05	Humidity:	31 %
Modification State:	CW	Tester:	A. Laudani
		Laboratory:	Nemko

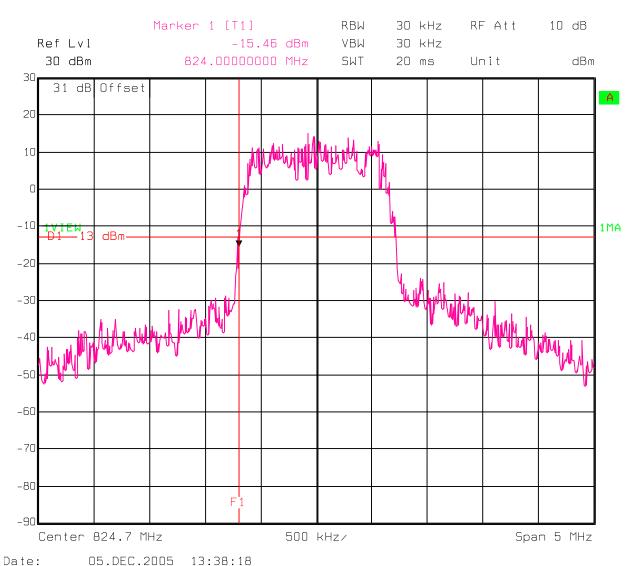
Test Results:

See Attached Plots.

Additional Observations:

Report Number: **2005 110898-FCC2** Specification: FCC Part 22 & 24

Part 22, Lower Band Edge.

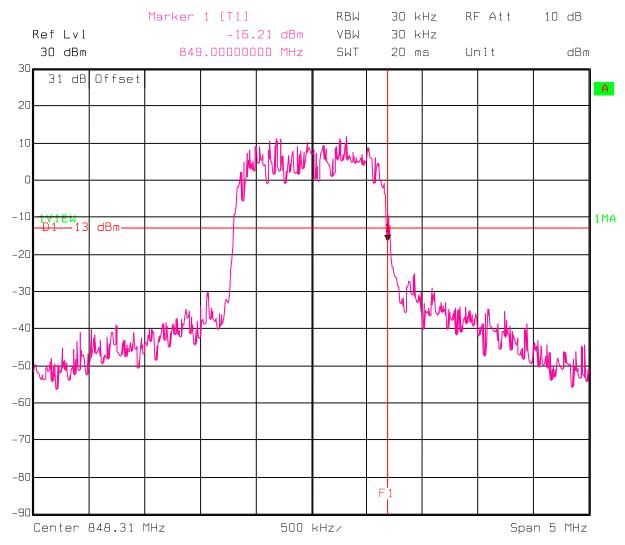


APPENDIX A: TEST RESULTS

Specification: FCC Part 22 & 24

Report Number: 2005 110898-FCC2

Part 22, Upper Band Edge

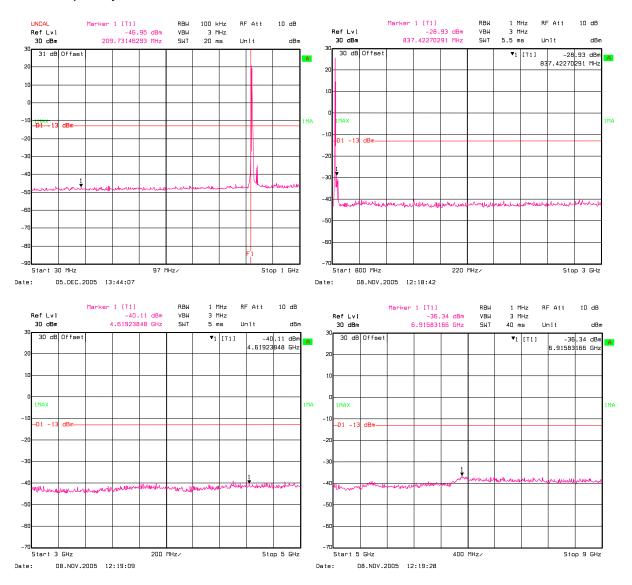


Date: 05.DEC.2005 13:56:29

Specification: FCC Part 22 & 24

Report Number: 2005 110898-FCC2

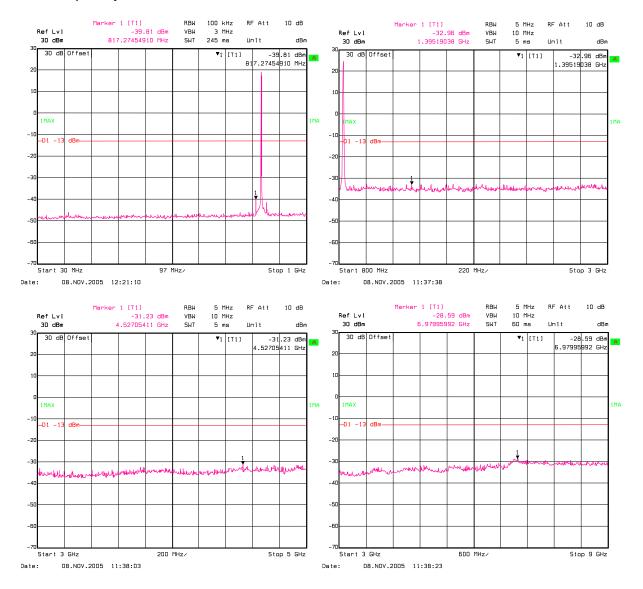
Low frequency Part 22



APPENDIX A: TEST RESULTS Report Number: 2005 110898-FCC2

Specification: FCC Part 22 & 24

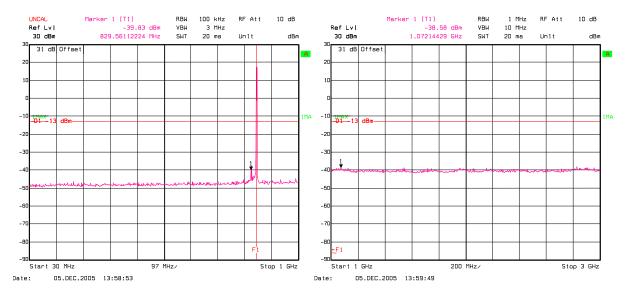
Mid frequency Part 22

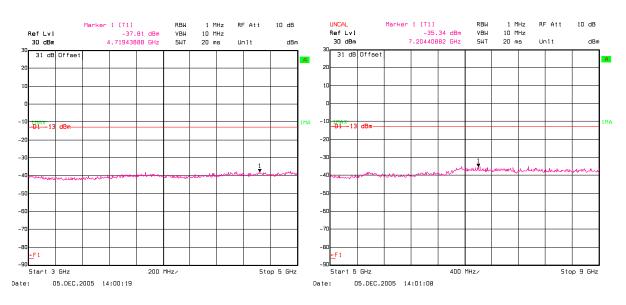


Report Number: 2005 110898-FCC2

Specification: FCC Part 22 & 24 FCC ID:TS5-6050M-OM200

High frequency Part 22



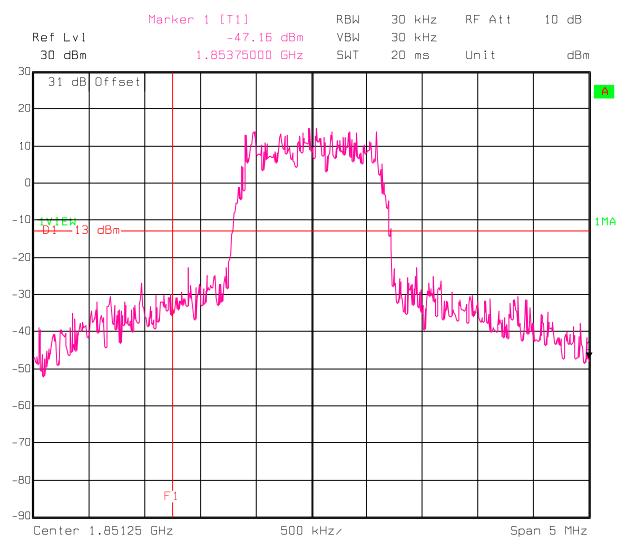


Report Number: 2005 110898-FCC2

Specification: FCC Part 22 & 24

FCC ID:TS5-6050M-OM200

Part 24, Lower Band Edge

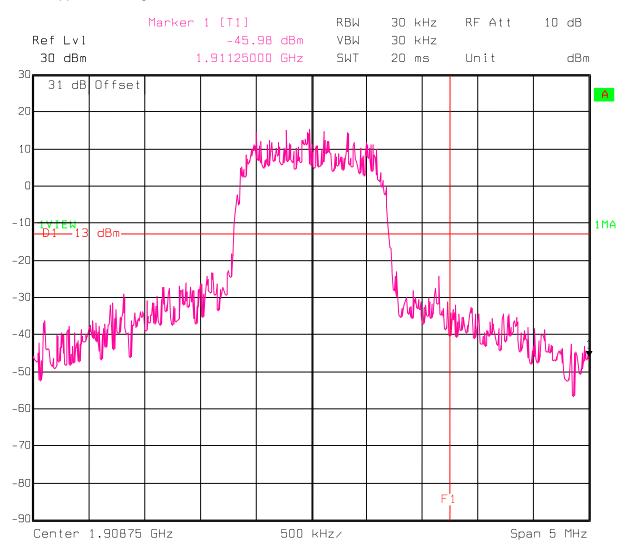


05.DEC.2005 15:14:41 Date:

APPENDIX A: TEST RESULTS Report Number: 2005 110898-FCC2

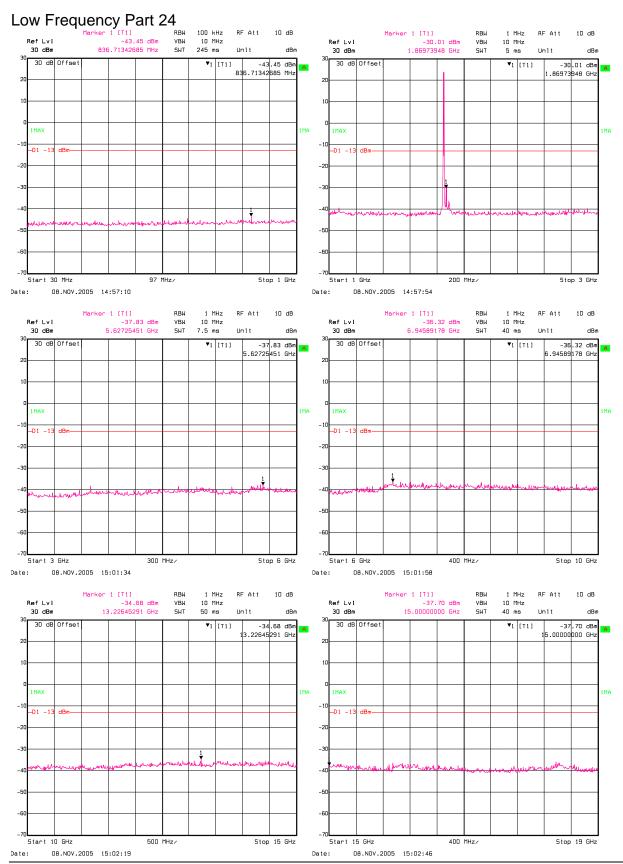
Specification: FCC Part 22 & 24

Part 24, Upper Band Edge



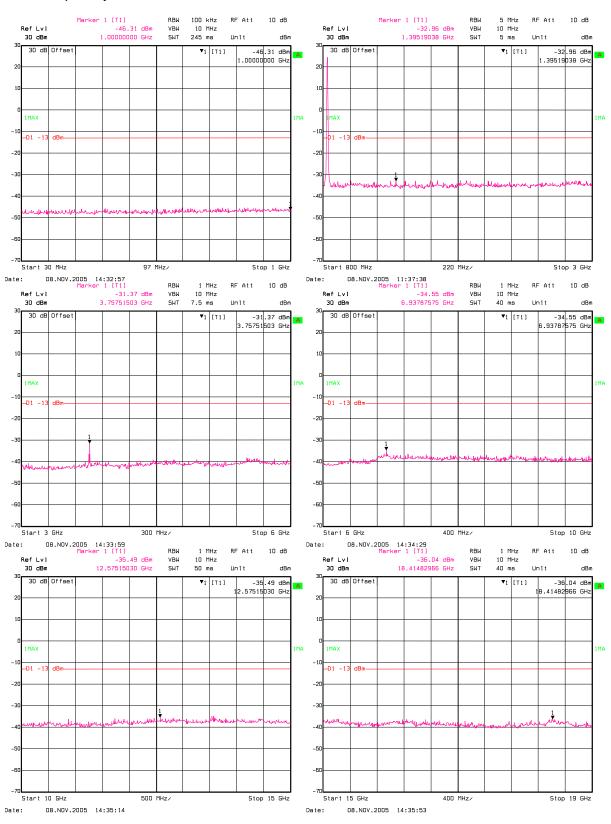
05.DEC.2005 15:13:24 Date:

Specification: FCC Part 22 & 24



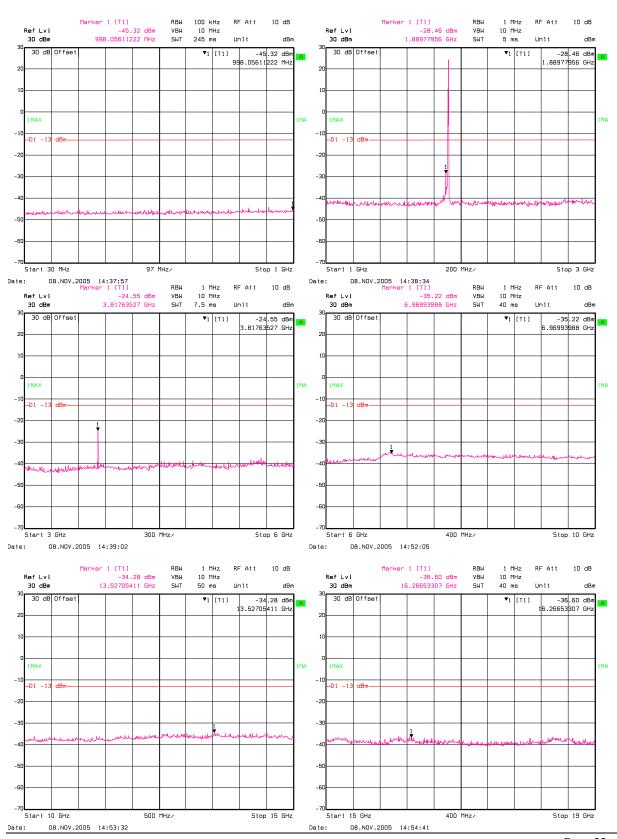
Report Number: **2005 110898-FCC2** Specification: FCC Part 22 & 24

Mid Frequency Part 24



Report Number: **2005 110898-FCC2** Specification: FCC Part 22 & 24

High Frequency Part 24



Nemko USA APPENDIX A: TEST RESULTS

FCC ID:TS5-6050M-OM200

Report Number: **2005 110898-FCC2**Specification: FCC Part 22 & 24

Radiated Spurious Emissions

22.917; 24.238 Emission limits.

a) 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:

See Attached Table for Results

Additional Observations:

The Spectrum was searched from 30MHz to the 10th Harmonic.

The EUT was measured on three orthogonal axis, worst case presented.

All measurements were performed using a Peak Detector with a 1MHz RBW above 1GHz at a distance of 3 meters.

Substitution was performed on emissions at a level greater than 20 dB below the limit.

Report Number: **2005 110898-FCC2**Specification: FCC Part 22 & 24

				Ī	Radiated Emissi	ons Data				
Complete Preliminar Client Nan	ne :	YES					Job # :	25-898- Page	SEN 1	Test # : 1 of 1
EUT Nam		Sendum								
EUT Mode		OM200								
EUT Part		OM200								
EUT Seria		Transmit CV	۸/							
Specificati		FCC Part 22					Refere	nce .		
Bicon Ant.		NA	_	Temp. (°C):	16		recicio	1100 .	Date :	11/4/2005
Log Ant.#:		110		Humidity (%):	11				Time :	
DRG Ant.		529		EUT Voltage :	Vdc				Staff:	AL
Dipole Ant	:.#:	NA		EUT Frequency	': <u>-</u>			Ph	noto ID:	
Cable#:		SOATS		Phase:	<u> </u>			eak Ban		
Preamp#:		842		Location:	SOATS		Vi	deo Bar	ndwidth	1 MHz
Spec An.#	:	835		Distance:	3M					
QP #:		NA_								
PreSelect	#:	NA								
Meas.	Vertical	Horizontal		Max Level	Spec. Limit	Margin	EUT	Ant.	Pass	
Freq.	(dBuV)	(dBuV)	CF (db)	(dBm)	(dBm)	dB	Rotation	Height	Fail	0
(MHz)	pk	pk		pk	pk	pk			Unc.	Comment
824.70			30.9		-13.0					
1649.40	76.2	79.2	-12.7	-30.9	-13.0	-17.9	60	1	Pass	
2474.10	53.1	57.4	-10.0	-50.0	-13.0	-37.0	60	1	Pass	
026.50										
836.52 1673.04	76.3	79.3	-12.7	-30.8	-13.0	-17.8	60	1	Pass	
2509.56	52.1	57.0	-12.7	-30.6 -49.5	-13.0	-36.5	60	1	Pass	
2005.00	02.1	07.0	5.1	45.5	10.0	00.0	- 00		1 433	
848.31										
1696.62	75.7	80.5	-12.7	-29.6	-13.0	-16.6	60	1	Pass	
2544.93	52.8	57.3	-9.1	-49.2	-13.0	-36.2	60	1	Pass	
		1								
—		+								
		+	 				+			
		+								
		1								
										<u> </u>

Nemko USA

FCC ID:TS5-6050M-OM200

APPENDIX A: TEST RESULTS

Report Number: **2005 110898-FCC2**Specification: FCC Part 22 & 24

				R	adiated Emissi	ons Data				
Complete		YES					loh # ·	25-898-	SEN	Test # : 1
Preliminar	.,						Job # :	Page	1	of 1
Client Nan	•							i age		
EUT Name										
EUT Mode		OM200								
EUT Part		OM200								
EUT Seria		OIVIZUU								
EUT Confi		Transmit CI	۸/							
Specificati		1		T (00) :	40		Releie	ence:	D-4	44/4/0005
Bicon Ant.	# :	NA_		Temp. (°C):	18					11/4/2005
Log Ant.#:		110		Humidity (%):	61				Time :	
DRG Ant.		529		EUT Voltage :	Vdc				Staff :	
Dipole Ant	.#:	NA		EUT Frequency	·		_		noto ID:	
Cable#:		SOATS		Phase:	-			eak Ban		
Preamp#:		842		Location:	SOATS		V	ideo Bar	ndwidth	1 MHz
Spec An.#		835		Distance:	3M					
QP #:		NA_								
PreSelect#	ė;	NA_								
Meas.	Vertical	Horizontal		Max Level	Spec. Limit	Margin	EUT	Ant.	Pass	
Freq.	(dBuV)	(dBuV)	CF (db)	(dBm)	(dBm)	dB	Rotation	Height	Fail	
(MHz)	pk	pk		pk	pk	pk			Unc.	Comment
1851.25	-									
3702.50	64.4	61.3	-3.6	-34.5	-13.0	-21.5	60	1	Pass	
5553.75	54.2	54.1	2.0	-39.0	-13.0	-26.0	60	1	Pass	
7405.00	49.4	46.7	3.9	-41.9	-13.0	-28.9	60	1	Pass	
9256.25	48.0	44.2	9.5	-37.8	-13.0	-24.8	60	1	Pass	
1880.00										
	64.0	64.4	2.6	24.7	12.0	04.7	- 60	-	Door	
3760.00	64.2	61.1	-3.6	-34.7	-13.0	-21.7	60	1	Pass	
5640.00	54.4	54.1	2.0	-38.8	-13.0	-25.8	60	1	Pass	
7520.00	49.3	46.2	5.1	-40.8	-13.0	-27.8	60	1	Pass	1
7520.00	48.1	44.4	9.5	-37.7	-13.0	-24.7	60	1	Pass	
7520.00 9400.00										
9400.00										
9400.00 1908.75 3817.50	63.9	61.2	-3.6	-35.0	-13.0	-22.0	60	1	Pass	
9400.00 1908.75 3817.50 5726.25	54.5	53.9	2.0	-38.7	-13.0	-25.7	60	1	Pass	
9400.00 1908.75 3817.50 5726.25 7635.00		53.9 47.1	2.0 5.1	-38.7 -40.9	-13.0 -13.0	-25.7 -27.9				
9400.00 1908.75 3817.50 5726.25	54.5	53.9	2.0	-38.7	-13.0	-25.7	60	1	Pass	
9400.00 1908.75 3817.50 5726.25 7635.00	54.5 49.2	53.9 47.1	2.0 5.1	-38.7 -40.9	-13.0 -13.0	-25.7 -27.9	60 60	1	Pass Pass	
9400.00 1908.75 3817.50 5726.25 7635.00	54.5 49.2	53.9 47.1	2.0 5.1	-38.7 -40.9	-13.0 -13.0	-25.7 -27.9	60 60	1	Pass Pass	
9400.00 1908.75 3817.50 5726.25 7635.00	54.5 49.2	53.9 47.1	2.0 5.1	-38.7 -40.9	-13.0 -13.0	-25.7 -27.9	60 60	1	Pass Pass	
9400.00 1908.75 3817.50 5726.25 7635.00	54.5 49.2	53.9 47.1	2.0 5.1	-38.7 -40.9	-13.0 -13.0	-25.7 -27.9	60 60	1	Pass Pass	
9400.00 1908.75 3817.50 5726.25 7635.00	54.5 49.2	53.9 47.1	2.0 5.1	-38.7 -40.9	-13.0 -13.0	-25.7 -27.9	60 60	1	Pass Pass	

APPENDIX A: TEST RESULTS

Report Number: **2005 110898-FCC2**Specification: FCC Part 22 & 24

Substitution Method For Radiated Emissions

Complete	Yes		Job #:	25-898-SEN	Test #:	3
Preliminary			Page	1	of	1
Client Name :	Sendum Wireless Corporation					
EUT Name :	OM200					
EUT Model # :	OM200					
EUT Part #:						
EUT Serial # :						
EUT Config. :	Transmit					
			_			
Specification :	FCC Part 22 & Part 24		_	Reference		
Rod. Ant. #:	NA Temp. (deg. C):	19	_	Date :	11/10/2005	
Bicon Ant.#:	NAHumidity (%):	61	_	Time :		
Log Ant.#:	110 EUT Voltage:	120 Vac		Staff:	A. Laudani	
DRG Ant. #	752 EUT Frequency:	60 Hz		Photo ID:		
DRG Ant. #	529 Phase:	1	_ Pe	ak Bandwidth:	RBW-1MHz, VBV	V-1MHz
Dipole Ant.#:	759 Location:	SOATS				
Cable#:	10ft Distance:	3m	_			
Preamp#:	NA					
Spec An.#:	835					
Signal Gen.#	836					

target		Horn	cable	Signal	Total	Spec	Margin
Frequency	level	Gain	loss	Generator	(EIRP)		
mHz	dBuV/m	dBi	dB	dBm	dBm	dBm	dBm
1649.40	79.2	5.37	0.61	-36.4	-31.64	-13.0	-18.64
1673.04	79.3	5.41	0.63	-36.3	-31.52	-13.0	-18.52
1696.62	80.5	5.45	0.65	-35.1	-30.30	-13.0	-17.30

APPENDIX A: TEST RESULTS
Report Number: 2005 110898-FCC2

Specification: FCC Part 22 & 24

Occupied Bandwidth

Using an RBW of 300Hz or 1% of the emission bandwidth, The spectral shape of the output should look similar to the input for all modulations.

Sec. 24.238 Emission limits

(b) Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

Test Conditions:

Sample Number:	001	Temperature:	22 °C
Date:	12-05-05	Humidity:	29 %
Modification State:	CW	Tester:	A. Laudani
		Laboratory:	Nemko AL

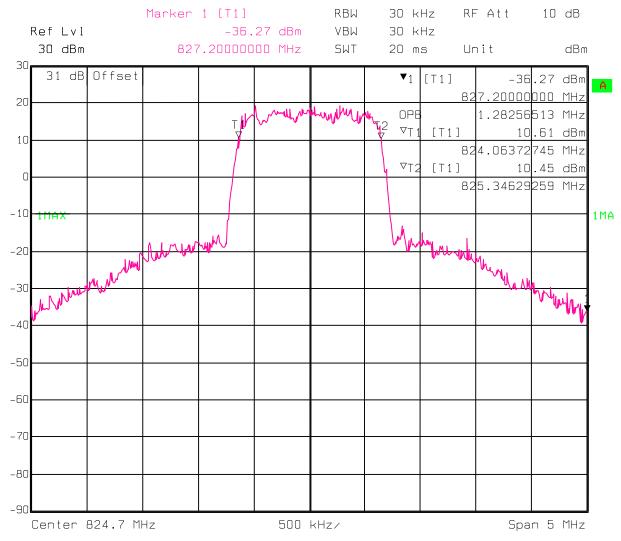
Test Results:

See Attached Plots.

APPENDIX A: TEST RESULTS

Report Number: **2005 110898-FCC2**Specification: FCC Part 22 & 24

Part 22 Low Frequency Bandwidth

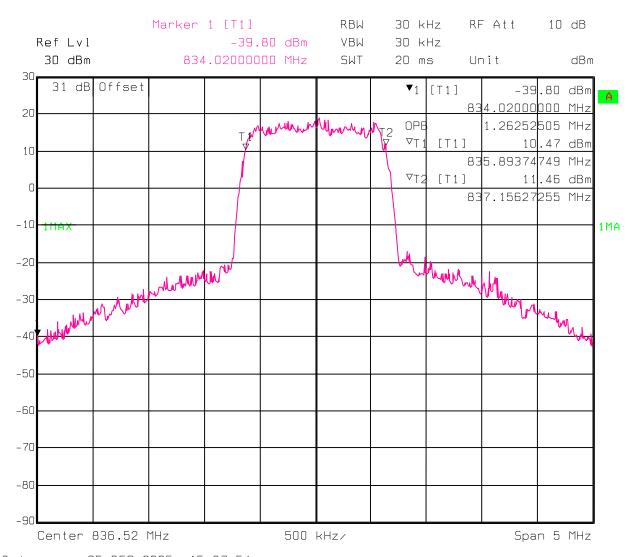


Date: 05.DEC.2005 15:27:10

APPENDIX A: TEST RESULTS

Report Number: **2005 110898-FCC2**Specification: FCC Part 22 & 24

Part 22 Mid Frequency Bandwidth



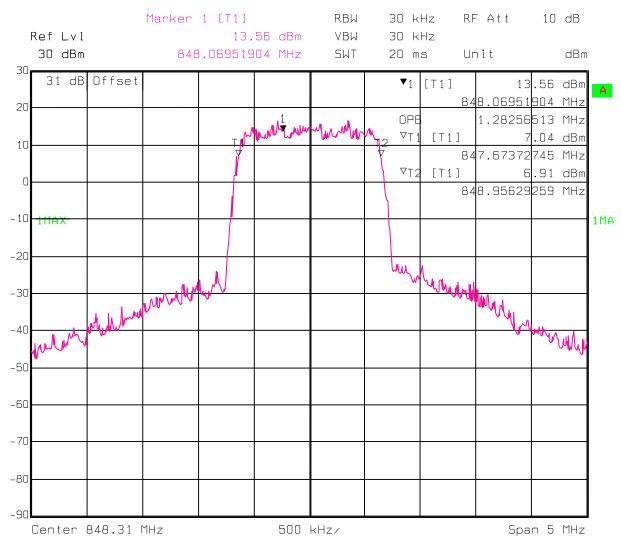
Date: 05.DEC.2005 15:27:54

APPENDIX A: TEST RESULTS

Specification: FCC Part 22 & 24

Report Number: 2005 110898-FCC2

Part 22 High Frequency Bandwidth

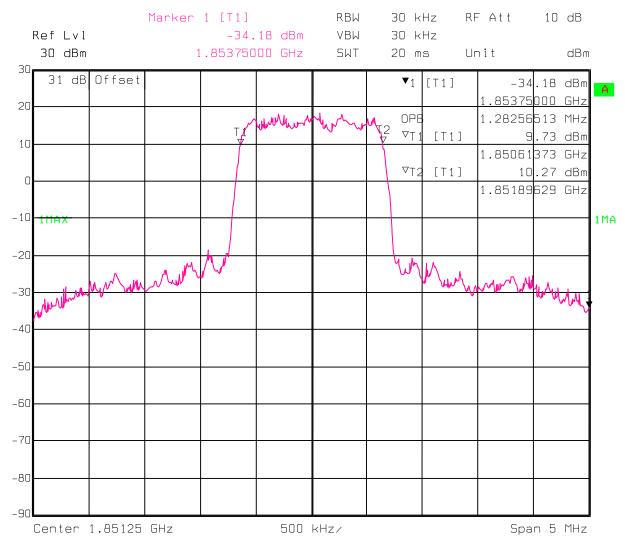


Date: 05.DEC.2005 15:32:34

APPENDIX A: TEST RESULTS

Report Number: **2005 110898-FCC2** Specification: FCC Part 22 & 24

Part 24 Low Frequency Bandwidth



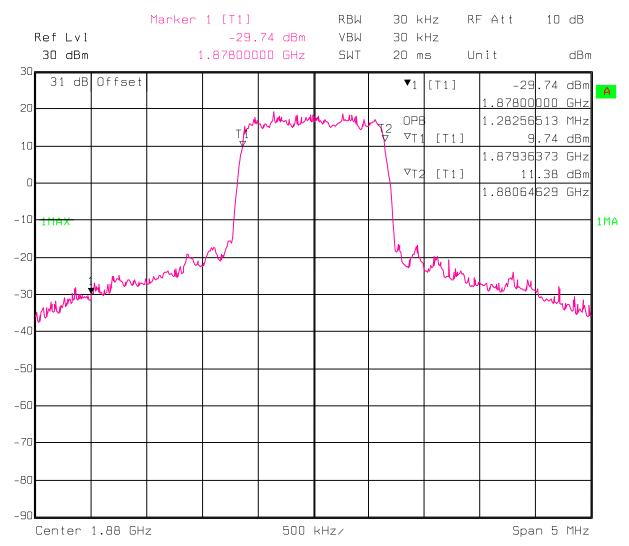
Date: 05.DEC.2005 15:23:19

Nemko USA APPENDIX A: TEST RESULTS

> Report Number: 2005 110898-FCC2 Specification: FCC Part 22 & 24

FCC ID:TS5-6050M-OM200

Part 24 Mid Frequency Bandwidth

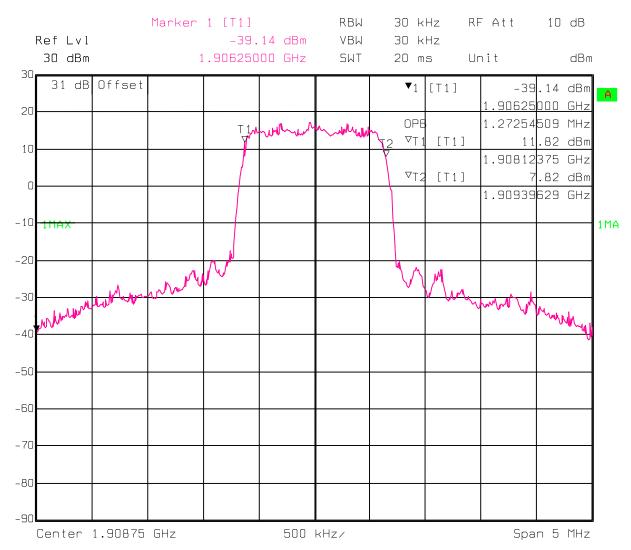


05.DEC.2005 Date: 15:24:47

Specification: FCC Part 22 & 24

FCC ID:TS5-6050M-OM200

Part 24 High Frequency Bandwidth



Date: 05.DEC.2005 15:25:54

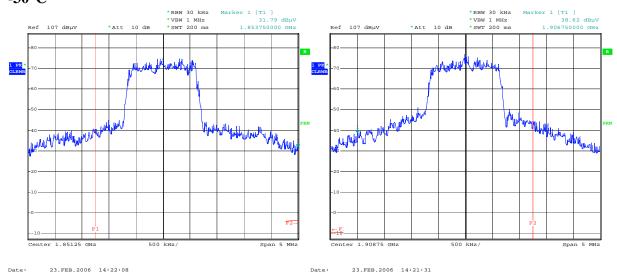
Specification: FCC Part 22 & 24

FCC ID:TS5-6050M-OM200

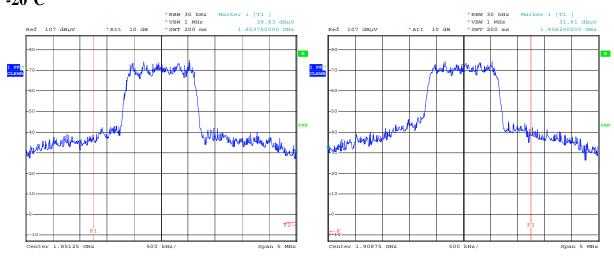
Appendix B: PCS Frequency Stability

Bandedge plots from -30 °C to + 50 °C step 10°:

-30°C



-20°C



Date: 23.FEB.2006 14:34:12

Date: 23.FEB.2006 14:34:41

Nemko USA

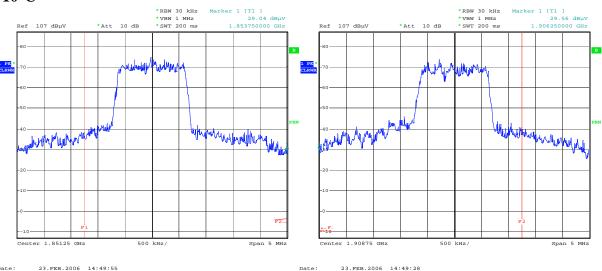
APPENDIX B: PCS FREQUENCY STABILITY

Report Number: 2005 110898-FCC2

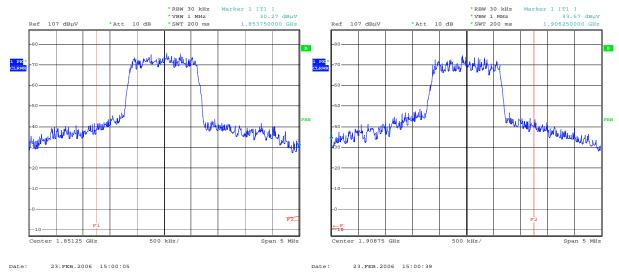
FCC ID:TS5-6050M-OM200

Specification: FCC Part 22 & 24

-10°C



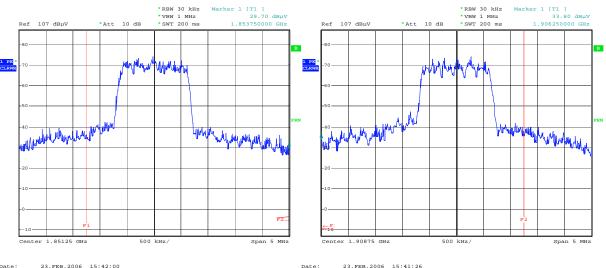
$0^{\circ}C$



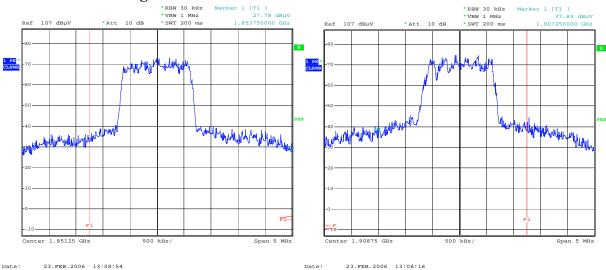
FCC ID:TS5-6050M-OM200

Specification: FCC Part 22 & 24

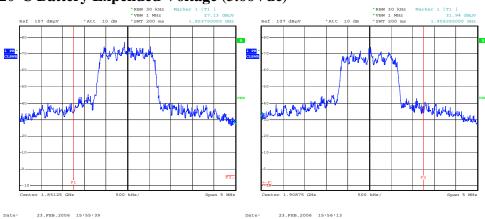
10°C



20°C Nominal Voltage



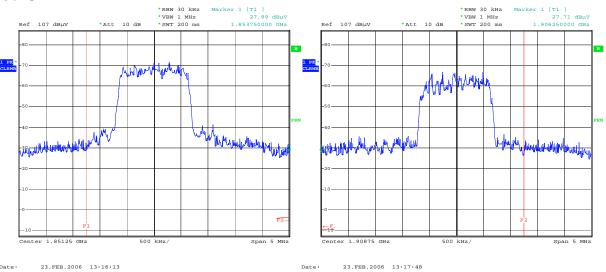
20°C Battery Expended Voltage (3.66Vdc)



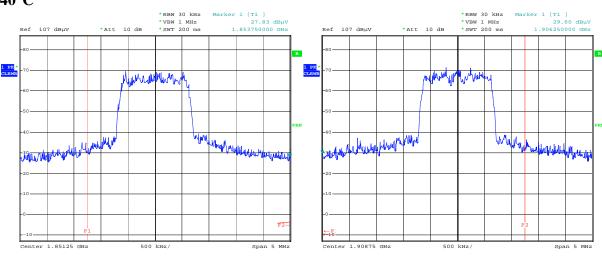
FCC ID:TS5-6050M-OM200

Specification: FCC Part 22 & 24





40°C

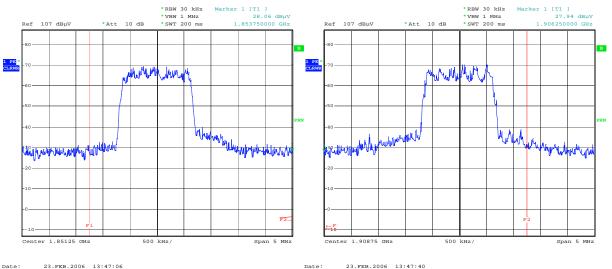


Date: 23.FEB.2006 13:29:56 Date: 23.FEB.2006 13:29:24

FCC ID:TS5-6050M-OM200

Specification: FCC Part 22 & 24

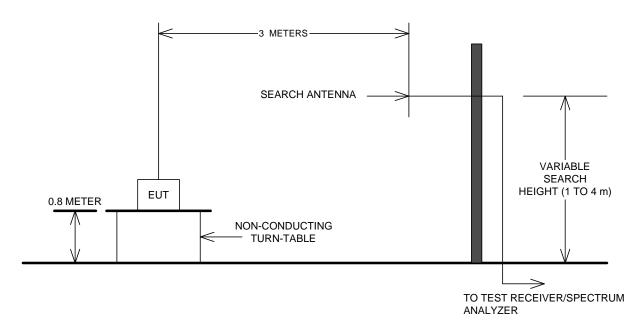
50°C



FCC ID:TS5-6050M-OM200 Specification: FCC Part 22 & 24

Appendix C : Block Diagram of Test Setups

Test Site For Radiated Emissions



Conducted Spurious Emissions, Output power, Occupied Bandwidth, Frequency Stability (EUT in environmental chamber)

