

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



CERTIFICATION TEST REPORT

Part 15.247C IC RSS-210

For The RF Module Model: COM2G4

FCC ID: BYMCOM2G4 IC: 1860A-COM2G4

PREPARED FOR:

HME 14110 Stowe Dr. Poway, CA 92064

Prepared on Feb. 6, 2008

Report Number: 2008 0210169 FCC

10169-1 Total Pages: 30

Nemko USA, Inc.		11696 Sorren	o Valley Road, Suite F, San Diego, CA 92121 Phone (858) 755-5525 Fax (858) 452-1810	
DATE	DOCUMENT NAME		DOCUMENT #	PAGE
Feb. 6, 2008	2008 COM2G4 Certification Test Report FCC ID: BYMCOM2G4 IC: 1860A-COM2G4		2008 0210169 FCC	2 of 30

DOCUMENT HISTORY

REVISION	DATE	COMMENTS	
-	Feb. 6, 2008	Prepared By:	Ferdinand S. Custodio
-	Feb. 6, 2008	Initial Release:	Alan Laudani

NOTE: Nemko USA, Inc. hereby makes the following statements so as to conform to Chapter 10 (Test Reports) Requirements of ANSI C63.4 (2003) "Methods and Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz":

NOTE: Nemko USA, Inc. hereby makes the following statements so as to conform to Chapter 10 (Test Reports) Requirements of ANSI C63.4 (2003) "Methods and Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz":

- The unit described in this report was received at Nemko USA, Inc.'s facilities on January 28, 2008.
 Testing was performed on the unit described in this report on January 29, 2008 to February 6, 2008.
- The Test Results reported herein apply only to the Unit actually tested, and to substantially identical Units.
- This report does not imply the endorsement of the Federal Communications Commission (FCC), NVLAP or any other government agency.

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DATE	DOCUMENT NAME		DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification Test Report FCC ID: BYMCOM2G4 IC: 1860A-COM2G4		2008 0210169 FCC	3 of 30

TABLE OF CONTENTS

1.	ADMINISTRATIVE DATA AND TEST SUMMARY	5
1.1.	ADMINISTRATIVE DATA	
2.	SYSTEM CONFIGURATION	
2.1.	DESCRIPTION AND METHOD OF EXERCISING THE EUT	
2.2.	SYSTEM COMPONENTS AND POWER CABLES	
2.3.	DEVICE INTERCONNECTION AND I/O CABLES.	
2.4.	DESIGN MODIFICATIONS FOR COMPLIANCE	
3.	DESCRIPTION OF TEST SITE AND EQUIPMENT	7
3.1.	DESCRIPTION OF TEST SITE	
4.	DESCRIPTION OF TESTING METHODS	8
4.1.	INTRODUCTION	8
4.2.	CONFIGURATION AND METHODS OF MEASUREMENTS FOR CONDUCTED EMISSIONS	8
4.3.	CONFIGURATION AND METHODS OF MEASUREMENTS FOR FREQUENCY IDENTIFICATION	9
4.4.	CONFIGURATION AND METHODS OF MEASUREMENTS FOR RADIATED EMISSIONS	10
5.	TEST RESULTS	11
5.1.	CONDUCTED EMISSIONS TEST DATA – TRANSMIT MODE	11
5.2.	CONDUCTED EMISSIONS TEST DATA – RECEIVE MODE	12
5.3	RADIATED EMISSIONS TEST DATA –	13
5.3.	DUTY CYCLE MEASUREMENT	15
5.4.	BANDWIDTH	17
5.5.	POWER LEVEL AND RADIATED SPURIOUS EMISSIONS	
5.6.	Fundamental Emissions	
5.7.	NUMBER OF HOPPING CHANNELS	
5.8.	CHANNEL SEPARATION	
5.9.	TIME OF OCCUPANCY	
5.10.	Test Equipment	

Nemko USA, Inc.		11696 Sorren	to Valley Road, Suite F, San I Phone (858) 755-5525 Fa	0 /
DATE	DOCUMENT NAME		DOCUMENT #	PAGE
Feb. 6, 2008	8 COM2G4 Certification Test Report FCC ID: BYMCOM2G4 IC: 1860A-COM2G4		2008 0210169 FCC	4 of 30

CERTIFICATION

Nemko USA, Inc., an independent Electromagnetic Compatibility (EMC) Test Laboratory, produced this Test Report and performed the Radio Frequency Interference (RFI) testing and data evaluation contained herein.

Nemko USA, Inc.'s measurement facility is currently registered with the United States Federal Communications Commission (FCC) in accordance with the provisions of 47 United States Code (CFR) Part 2, Subpart I, Section 2.948(a). A current description of Nemko USA, Inc.'s measurement facility is on file with the FCC. Nemko USA Inc. has additionally satisfied the FCC that it complies with the requirements set forth in 47 CFR Part 2, Subpart I, Section 2.948(d) regarding the accreditation of EMC laboratories.

The RFI testing, test data collection and test data evaluation were accomplished in accordance with the ANSI C63.4–2003 Standard, and in accordance with the applicable sections of the FCC rules (47 CFR Parts 2 and 15). The testing was also accomplished in accordance with Industry Canada's ICES-003 standard for unintentional radiating device per EMCAB-3, Issue 3 (May 1998). The administrative summary of this test report provides a description of the test sample.

I hereby certify that the test data, test data evaluation, and equipment configurations used to compile this test report are a true and accurate representation of the test sample's radio frequency interference characteristics as of the test date(s), and, for the design of the test sample.

Alan A. Landain

Alan Laudani EMC Engineer

Nemko USA, Inc. 1169		11696 Sorren	to Valley Road, Suite F, San I Phone (858) 755-5525 Fa	0 /
DATE	DOCUMENT NAME		DOCUMENT #	PAGE
Feb. 6, 2008	6, 2008 COM2G4 Certification Test Report FCC ID: BYMCOM2G4 IC: 1860A-COM2G4		2008 0210169 FCC	5 of 30

1. ADMINISTRATIVE DATA AND TEST SUMMARY

1.1. Administrative Data

CLIENT:	HME 14110 Stowe Dr.
	POWAY, CA 92064 (858) 535-6046
CONTACT: E-Mail:	Victor Lerner vlerner@hme.com
DATE (S) OF TEST:	January 29, 2008 to February 6, 2008
EQUIPMENT UNDER TEST (EUT):	RF Module
MODEL:	COM2G4
CONDITION UPON RECEIPT	Suitable for Test
TEST SPECIFICATION:	FCC, Part 15.247, Subpart C, RSS 210 (Issue 7, June 2007)

Test Summary

Specification	Frequency Range	Compliance Status
FCC, CFR 47, Section 15.207	0.15 MHz - 30.00 MHz	PASS
FCC, CFR 47, Section 15.209	30 MHz – 10 th Harmonic	PASS
FCC CFR 47, §15.247 Plus Bandedge	2403.3 – 2479.1 MHz	PASS
RSS-210 - Low Power License Exempt Radio- communication Devices (All Frequency Bands)	2403.3 – 2479.1 MHz	PASS

Testing was started at 30 MHz as there are no RF signals generated below this frequency.

Alan A. Landain

Alan Laudani EMC Engineer

Refer to the test results section for further details.

Nemko USA, Inc.		11696 Sorren	to Valley Road, Suite F, San Diego, CA 92121 Phone (858) 755-5525 Fax (858) 452-1810	
DATE	DOCUMENT NAME		DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification Test Report FCC ID: BYMCOM2G4 IC: 1860A-COM2G4		2008 0210169 FCC	6 of 30

2. SYSTEM CONFIGURATION

2.1. Description and Method of Exercising the EUT

The EUT was installed inside the HME WS200. It is a wireless speaker powered by 9V NiMH battery. An optional AC Adapter was used as worst case scenario for emission testing. For 15.247, a variable power supply was used to verify no RF output power level changes as line input voltage was varied by +/- 15% and then returned to the AC power supply. The antenna is integral to the module.

2.2. System Components and Power Cables

	MANUFACTURER	
DEVICE	MODEL #	POWER CABLE
	SERIAL #	
EUT - Wireless Speaker	НМЕ	Battery powered (but tested
	BP200	with AC Adapter for worst
	(WS200) F04K0006	case scenario)
EUT – Battery for EUT	HME	N/A
	G27021-1 Rev B (BAT850 NiMH 2100mAH)	
	03K00759	

2.3. Device Interconnection and I/O Cables

Connection	I/O Cable
No connections	

2.4. Design Modifications for Compliance

The following design modifications were made to the EUT during testing.

No design modifications were made to the EUT during testing.

Nemko USA, Inc.		11696 Sorren	to Valley Road, Suite F, San I Phone (858) 755-5525 Fa	8 /
DATE	DOCUMENT NAME		DOCUMENT #	PAGE
Feb. 6, 2008	2008 COM2G4 Certification Test Report FCC ID: BYMCOM2G4 IC: 1860A-COM2G4		2008 0210169 FCC	7 of 30

3. DESCRIPTION OF TEST SITE AND EQUIPMENT

3.1. Description of Test Site

The test site is located at 11696 Sorrento Valley Road, Suite F, San Diego, CA 92121. The site is physically located 18 miles Northwest of downtown San Diego. The general area is a valley 1.5 miles east of the Pacific Ocean. This particular part of the valley tends to minimize ambient levels, i.e. radio and TV broadcast stations and land mobile communications. The three and ten-meter Open Area Test Site (OATS) is located behind the office/lab building. It conforms to the normalized site attenuation limits and construction specifications as set in the EN 55022 (1987), CISPR 16 and 22 (1985) and ANSI C63.4-2001 documents. The OATS RN 90579 normalized site attenuation characteristics are verified for compliance every year.

Nemko USA	A, Inc.	11696 Sorrento Valley Road, Suite F, San Diego, CA 92121 Phone (858) 755-5525 Fax (858) 452-1810				
DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE		
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC	•	2008 0210169 FCC	8 of 30		

4. DESCRIPTION OF TESTING METHODS

4.1. Introduction

As required in 47 CFR, Parts 2 and 15, the methods employed to test the radiated and conducted emissions (as applicable) of the EUT are those contained within the American National Standards Institute (ANSI) document ANSI C63.4–2003, titled "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz." All applicable FCC Rule Sections that provide further guidance for performance of such testing are also observed.

For General Test Configuration please refer to Figure 1 on the following page.

Digital devices sold in Canada are required to comply with the Interference Causing Equipment Standard for Digital Apparatus, ICES-003. These test methods and limits are specified in the Canadian Standards Association's (CSA) Standard C108.8-M1983 (1-1-94 version) and are "essentially equivalent" with FCC, Part 15 and CISPR 22 (EN55022) rules for unintentional radiators per EMCAB-3, Issue 3 (May 1998). No further testing is required for compliance to ICES-003.

4.2. Configuration and Methods of Measurements for Conducted Emissions

Section 7 of ANSI C63.4 determines the general configuration of the EUT and associated equipment, as well as the test platform for conducted emissions testing. Tabletop devices are placed on a non-conducting surface 80 centimeters above the ground plane floor and 40 centimeters from the ground plane wall. The EUT and associated system are configured to operate continuously, representing a "normally operating" mode. The EUT is powered via a Line Impedance Stabilization Network (LISN). The emissions are recorded using the required bandwidth of 9 kHz in the quasi-peak mode. The average amplitude is also observed employing a 10 kHz bandwidth to determine the presence of broadband RFI. When such interference is caused by broadband sources (as defined by the FCC and ANSI Rules), the deviation guidelines contained in Section 11.3.1 of ANSI C63.4 are employed, which allows a correction factor of 13 dB to be subtracted from the quasi-peak reading. The emission levels are then compared to the applicable FCC limits to determine compliance.

Nemko USA	A, Inc.	11696 Sorrento Valley Road, Suite F, San Diego, CA 9212 Phone (858) 755-5525 Fax (858) 452-1810				
DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE		
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC		2008 0210169 FCC	9 of 30		

4.3. Configuration and Methods of Measurements for Frequency Identification

When performing all testing of equipment, the actual emissions of the EUT are segregated from ambient signals present within the laboratory or the open-field test range. Preliminary testing is performed to ensure that ambient signals are sufficiently low to allow for proper observation of the emissions from the EUT. Incoming power lines are filtered using a 120 dB, 30-ampere; 115/208-volt filter to assist in reducing ambient signals for tests of levels of conducted emissions. Ambients within the laboratory are compared to those noted at the nearby open-field site to discriminate between signals produced from the EUT and ambient signals. In the event that a significant emission is produced by the EUT at a frequency which is also demonstrating significant ambient signals, the spectrum analyzer is placed in the peak mode, the bandwidth is narrowed, the EUT's signal is centered on the analyzer, the scan width is expanded to 50 kHz while monitoring the audio to ensure that only the EUT signal is present, the analyzer is switched to quasi-peak mode, and the level of the EUT signal is recorded.

Nemko USA	A, Inc.	11696 Sorrento Valley Road, Suite F, San Diego, CA 92121 Phone (858) 755-5525 Fax (858) 452-1810				
DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE		
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC		2008 0210169 FCC	10 of 30		

4.4. Configuration and Methods of Measurements for Radiated Emissions

Section 8 of ANSI C63.4 determines the general configuration and procedures for measuring the radiated emissions of equipment under test. Initially, the primary emission frequencies are identified inside the test lab by positioning a broadband receive antenna one meter from the EUT to locate frequencies of significant radiation. Next, the EUT and associated system are placed on a turntable on a ten meter open area test site (registered with the FCC in accord with its Rules and ANSI C63.4) and the receive antenna is located at a distance of ten meters from the EUT.

The EUT and associated system are configured to operate continuously, representing a "normally operating" mode. All significant radiated emissions are recorded when maximum radiation on each frequency is observed, in accordance with part 8 of ANSI C63.4–2003 and Section 15.33 of the FCC Rules. To ensure that the maximum emission at each discrete frequency of interest is observed, the receive antenna is varied in height from one to four meters and rotated to horizontal and vertical polarities, and the turntable is also rotated to determine the worst emitting configuration. The numerical results of the test are included herein to demonstrate compliance.

The numerical results that are applied to the emissions limits are arrived at by the following method:

Example: A=RR+CL+AF A = Amplitude dBuV/m RR = Receiver Reading dBuV CL = cable loss dB AF = antenna factor dB/m Example Frequency = 110MHz 18.5 dBuV (spectrum analyzer reading) +3.0 dB (cable loss @ frequency) 21.5 dBuV +15.4 dB/m (antenna factor @ frequency) 36.9 dBuV/m Final adjusted value

The final adjusted value is then compared to the appropriate emission limit to determine compliance.

Nemko USA	A, Inc.	11696 Sorrento Valley Road, Suite F, San Diego, CA 92121 Phone (858) 755-5525 Fax (858) 452-1810				
DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE		
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC	*	2008 0210169 FCC	11 of 30		

5. Test Results

5.1. Conducted Emissions Test Data – Transmit Mode

AN#										_	ature	74			ΈF
	10169-1										Humidity	45		_	%
UT Name	RF Modul	le]	Baro	me	tric Pressure	30.2	1	I	Ig
UT Model	COM2G4	(BP20	00 wa	s pro	ototy	pe model na	me.)	7	Test	Lo	cation	Encl	losu	re	1
loverning Doc	CFR 47, F	Part 15E	3					,	Test	En	gineer	Ferd	lina	nd	Custo
asic Standard	Sec. 15.20)7]	Date	;		Janu	iary	29,	2008
arameters	Peak RF E	3 W: 10)kHz	VB	W: 1	00kHz									
	Peak less	than A	vera	ge I	Limi	ts; therefor	re, Quasi-	Peak	and	Av	erage Detecto	ors not	req	uir	ed.
Nemko USA, Inc.															
FCC Class B Conducted	Emissions								E		FModule				
120VAC @ 60Hz, L1 PK,	QP = 0, AV = X								1	10169-1	NEX#100588				
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Nemko USA	A, Inc.	11696 Sorrento Valley Road, Suite F, San Diego, CA 92121 Phone (858) 755-5525 Fax (858) 452-1810				
DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE		
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC		2008 0210169 FCC	12 of 30		

5.2. Conducted Emissions Test Data – Receive mode

EUT NameREUT ModelCGoverning DocCBasic StandardSParametersP		z VBW:	: 100kHz		Bar Tes	ome t Loo t Eng	Humidity tric Pressure cation gineer	-			
EUT Model C Governing Doc C Basic Standard S Parameters F Legend E Nemko USA, Inc. FCC Class B Conducted Emis	COM2G4 (BP200 wa FR 47, Part 15B ec. 15.107 eak RF BW: 100kH Blue (Top) Line is Q	z VBW:	: 100kHz		Tes Tes	t Loo t En	cation	Enclo Ferdi		e 1	g
Governing Doc C Basic Standard S Parameters F Legend E Nemko USA, Inc. FCC Class B Conducted Emis	EFR 47, Part 15B ec. 15.107 eak RF BW: 100kH Blue (Top) Line is Q	z VBW:	: 100kHz		Tes	t En		Ferdi			
Basic Standard S Parameters P Legend E Nemko USA, Inc. FCC Class B Conducted Emis	ec. 15.107 eak RF BW: 100kH lue (Top) Line is Q			(Bottom) Li			gineer	-	nan	d C	
Parameters P Legend E Nemko USA, Inc. FCC Class B Conducted Emis	eak RF BW: 100kH Blue (Top) Line is Q			(Bottom) Li	Dat	e				uc	Custodi
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FCC Class B Conducted Emis					ine is A	verag	ge.				
), AV = X (Receive Mode)					HME BP200 RI 10169-1	F Module NEX#100588				
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	sions		1.5M	Frequency		HME BP200 R					
Nemko USA, Inc. FCC Class B Conducted Emis	sions			Frequency		HME BP200 R					
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Nemko USA, Inc. FCC Class B Conducted Emis 120VAC @ 60Hz, L2 PK, QP = 000 700 700 700 700 700 700 700 700 7	sions			Frequency		HME BP200 R					
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Nemko USA	A, Inc.	11696 Sorrento Valley Road, Suite F, San Diego, CA 92121 Phone (858) 755-5525 Fax (858) 452-1810				
DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE		
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC		2008 0210169 FCC	13 of 30		

5.3 Radiated Emissions Test Data -

Emissions reported below, Emissions were searched over a range of 30 MHz to 25000 MHz

Example Frequency = 39.7 MHz

48.6 dBuV (spectrum analyzer reading)

+0.6 dB (cable loss @ frequency)

+10.8 dB/m(antenna factor @ frequency)

-32.1 dB (PreAmp Gain @ frequency)

27.9 dBuV/m Final adjusted value

(BP200 was prototype model name.)

Radiated Emissions Data											
Job # : NEX #:	10169-1 100588			Time :	1/29/2008 10:30AM FSC	-	Page	1	of	_ ¹	
Client Name : EUT Name : EUT Model # : EUT Serial # : EUT Config. :	HME Wireless Sp BP200 with Receive mo	iin WS				EUT Frequency : 60 Phase: 1 NOATS				1 X	
Specification : Loop Ant. #: Bicon Ant.#: Log Ant.#: DRG Ant. # Cable LF#: Cable HF#: Preamp LF#: Preamp HF#:	CFR47 Par NA 113 111 NA SOATS NA 902 NA	113 Temp. (°C) : 12 111 Humidity (%) : 88 NA Spec An.#: 674 SOATS Spec An. Display #: 675 NA QP #: 676 902 PreSelect#: NA					Distance > 1000 MHZ: <u>3 m</u> Quasi-Pe: RBW: <u>120 kH</u> Video Bandwidth 300 kH Peak RBW: <u>1 MHz</u> Video Bandwidth 3 MHz Average RBW: <u>1 MHz</u> Video Bandwidth 10 Hz Measurements below 1 GHz are Quasi-Peak values, unless otherwise sta				
Meas. Meter Freq. Reading (MHz) Vertical	Meter Reading Horizontal	Det.	EUT Side F/L/R/B	Ant. Height m	Max. Reading (dBµV)	Corrected Reading (dBµV/m)	Spec. limit (dBµV/m)	CR/SL Diff. (dB)	Pass Fail	Comment	
39.7 47.5 42.0 47.3 75.1 45.6 116.4 40.9 123.2 38.6 136.6 36.9 176.3 32.3	48.6 44.8 48.7 36.5 38.2 37.1 32.9			1.0 1.0 1.0 1.0 1.0 1.0 1.0	48.6 47.3 48.7 40.9 38.6 37.1 32.9	27.9 26.7 24.4 25.8 20.1 17.4 18.7	40.0 40.0 43.5 43.5 43.5 43.5 43.5	-12.1 -13.3 -15.6 -17.7 -23.5 -26.1 -24.8	Pass Pass Pass Pass	Ambient noise Ambient noise Ambient noise Ambient noise Ambient noise Ambient noise	

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DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE	
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC		2008 0210169 FCC	14 of 30	

(BP200 was prototype model name.)

				R	adiate	d Emissio	ns Data					
Job # : NEX #:		<u>10169-1</u> 100588		-		1/29/2008 10:30AM	-	Page	1	of	_1	
Client Nan	ne :	HME		-		FSC		EUT Vol	tage :		120	
EUT Name EUT Mode	el # :	Wireless S BP200 wit					Phase: 1				<u> </u>	
EUT Seria EUT Confi		Transmit n	node					NOATS SOATS	- 1000		<u>X</u>	
Specificati	on :	Distance < 1000 MHz: 3 m Distance > 1000 MHz: 3 m CFR47 Part 15, Subpart C 15,209										
Loop Ant. Bicon Ant.	#:	<u>NA</u> 113		-	p. (°C) :					Quasi-P Vi	re: RBW: <u>120 kHz</u> deo Bandwidth 300 kHz	
Log Ant.#: DRG Ant.		111 NA		Humid	dity (%) : ec An.#:	88				Peak	RBW: <u>1 MHz</u> deo Bandwidth 3 MHz	
Cable LF# Cable HF#	-	SOATS NA	Sp		isplay #: QP #:					Average Vi	RBW: <u>1 MHz</u> deo Bandwidth 10 Hz	
Preamp Ll Preamp H		902 NA		Pre	Select#:	NA	Measurements below 1 GHz are Quasi-Peak values, unless otherwise stated. Measurements above 1 GHz are Average values, unless otherwise stated.					
Meas. Freq.	Meter Reading	Meter Reading	Det.	EUT Side	Ant. Height	Max. Reading	Corrected Reading	Spec. limit	CR/SL Diff.	Pass Fail		
(MHz)	Vertical	Horizontal	-	F/L/R/B	m	(dBµV)	(dBµV/m)	(dBµV/m)	(dB)		Comment	
<u>39.7</u> 42.0	47.5 47.3	48.6 44.8	Q Q		1.0 1.0	48.6 47.3	<u>27.9</u> 26.7	40.0 40.0	-12.1 -13.3	Pass Pass	Ambient noise Ambient noise	
75.1	45.6	48.7	Q		1.0	48.7	24.4	40.0	-15.6	Pass	Ambient noise	
116.4	40.9	36.5	Q		1.0	40.9	25.8	43.5	-17.7	Pass	Ambient noise	
123.2	38.6	38.2	Q		1.0	38.6	20.1	43.5	-23.5	Pass	Ambient noise	
136.6	36.9	37.1	Q		1.0	37.1	17.4	43.5	-26.1	Pass	Ambient noise	
176.3	32.3	32.9	Q		1.0	32.9	18.7	43.5	-24.8	Pass	Ambient noise	

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DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE		
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC		2008 0210169 FCC	15 of 30		

5.3. Duty Cycle Measurement

RSS-210 Annex 8.1(4)

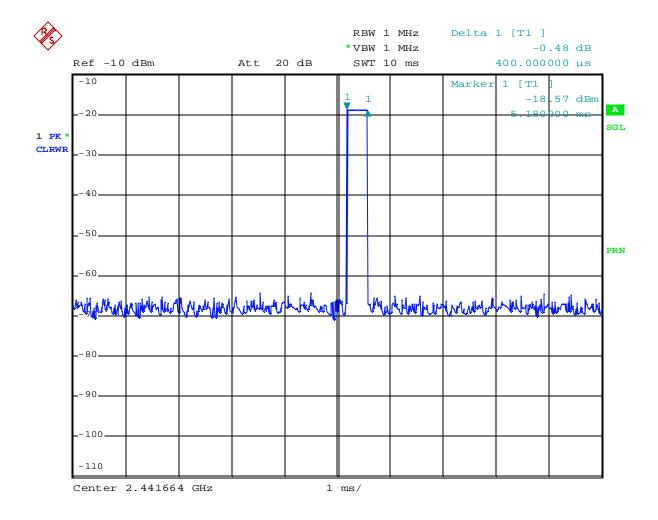
Digital Word = 400 microseconds

Duty cycle = 400 microseconds in 100ms

Duty cycle = 0.004

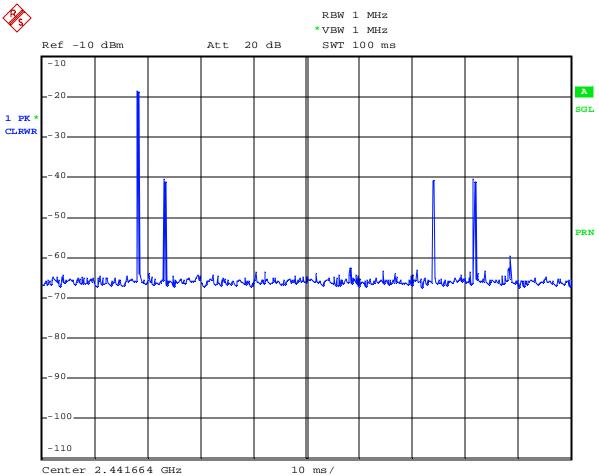
Duty Cycle Factor = $20*\log(.004) = -48$ dB

FCC limits DCF to -20dB



Date: 5.FEB.2008 10:50:55

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DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC		2008 0210169 FCC	16 of 30



10 ms/

Date: 5.FEB.2008 10:44:43

Nemko USA	A, Inc.	11696 Sorren	to Valley Road, Suite F, San I Phone (858) 755-5525 Fa	0 /
DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC		2008 0210169 FCC	17 of 30

5.4. Bandwidth

RSS-210 Annex 8.1(4)

(a)(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power now greater than 125mW.

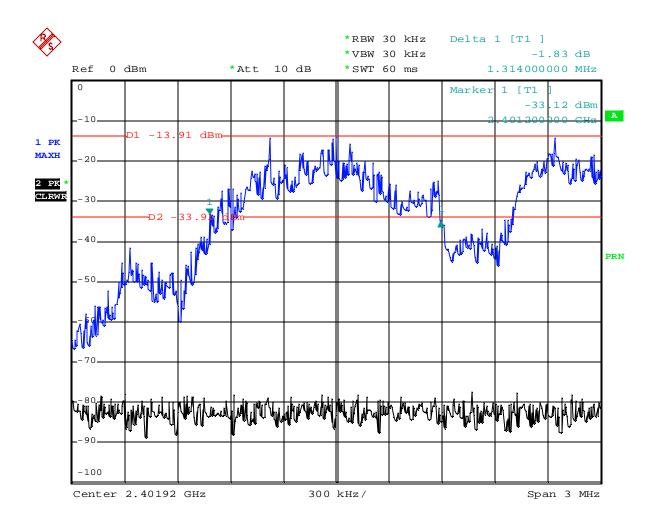
15.247(a)(1)

Test Results:

The result was validated with the original test report G0M20306-7968-P-15 under the same FCC ID.

	20 dB Bandwidth						
	Low Channel	Mid Channel	High Channel				
Original Data	1.22044088 MHz	1.28657315 MHz	1.22044088 MHz				
Verification Data	1.314 MHz	1.302 MHz	1.386 MHz				

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DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC		2008 0210169 FCC	18 of 30

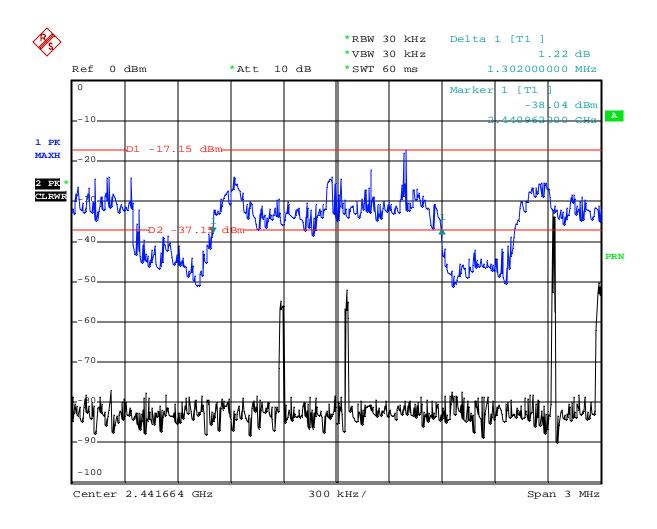


Date: 5.FEB.2008 14:12:04

Low Channel

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DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC		2008 0210169 FCC	19 of 30

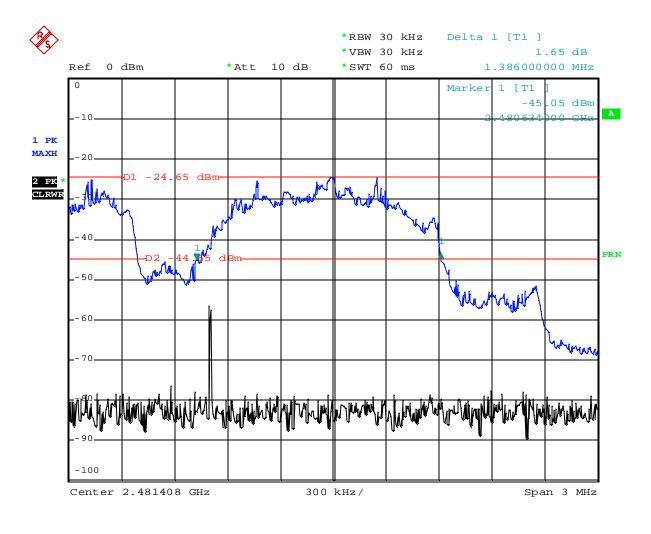
Higher Bandwidth



Date: 5.FEB.2008 12:30:34

Mid Channel

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DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC		2008 0210169 FCC	20 of 30



Date: 5.FEB.2008 13:58:00

High Channel

Nemko USA	A, Inc.	11696 Sorren	to Valley Road, Suite F, San I Phone (858) 755-5525 Fa	8 /
DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC		2008 0210169 FCC	21 of 30

5.5. Power Level and Radiated Spurious Emissions

RSS-210 Annex 8.4(2)

(a) Operation under the provisions of this Section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions:

(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system-hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average of each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

The EUT was tested in three orthogonal orientations and the worst-case emissions are presented below.

Power Level Limits 125 mWatt or 115.0 dBuV/m @3m. EUT complies.

 $10^{[(Field Strength in dBuV/m - 120)/20]} = Field Strength in V/m$

[(Field Strength in V/m x 3m)/5.5]² = Power in Watts

Measured 112.7 dBuV/m @ 3m which translates to a RF power of 0.0554 W.

Manufacturer's antenna gain is 0 dBi which calculates the conducted power to be 0.0554 W.

0.0554 W =17.47dBm

17.47 dBm + 0 dBi = 17.47 dBm

Test Results:

The result was validated with the original test report G0M20306-7968-P-15 under the same FCC ID.

	Radiated Power (EIRP)1							
	Low Channel	Mid Channel	High Channel					
Original Data	13.02 dBm	19.14 dBm	19.55 dBm					
Verification Data	12.14 dBm	16.94 dBm	17.47 dBm					

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DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC		2008 0210169 FCC	22 of 30

5.6. Fundamental Emissions

(BP200 was prototype model name.)

NEMKO USA, Inc.							-	1696 So San Di Tel: (8		5-5525	
				R	adiated	d Emissio	ns Data				
Job # : NEX #:		100588					-	Page	1	of	_1
Client Nam	e:	HME					-	EUT Vol	tage :		120
EUT Name		RF Module					-	EUT Fre	0	:	60
EUT Model # : BP200					-	Phase:	,		1		
EUT Serial	EUT Serial # :			-	NOATS						
EUT Config	g. :	Transmit					SOATS				X
							Distance	< 1000	MHz:	3 m	
			-					Distance	> 1000	MHz:	3 m
Specificatio	on :	FCC Part 15	.247C,	15.209,	15.205(a)	-				
Loop Ant. #		NA	-							Quasi-P	
Bicon Ant.#	<i>‡</i> :	NA	-		пр. (°С) :		-				Video Bandwidth 300 kH
Log Ant.#:		NA	-		dity (%) :		-			Peak	RBW: 1 MHz
DRG Ant. #	4	752	-		ec An.#:		-				Video Bandwidth 3 MHz
Cable LF#:		NA	_ Sp	ec An. D	isplay #:		-			Average	
Cable HF#		40ft	-	_	QP #:		-				Video Bandwidth 10 Hz
Preamp LF		<u>NA</u>	-	Pre	Select#:	NA	-				uasi-Peak values, unless otherwise stat
Preamp HF	.#	NA	-					Measur	ements abov	/e 1 GHz are	Average values, unless otherwise stat
Meas.	Meter	Meter	Det.	EUT	Ant.	Max.	Corrected	Spec.	CR/SL	Pass	
Freq.	Reading	Reading		Side	Height	Reading	Reading	limit	Diff.	Fail	
(MHz)	Vertical	Horizontal		F/L/R/B	m	(dBµV)	(dBµV/m)	(dBµV/m)	(dB)		Comment
2401.9	74.23	72.45	Р		1.0	74.23	107.4	115.0	-7.6	Pass	Х
2401.9	74.12	72.13	Р		1.0	74.12	107.3	115.0	-7.7	Pass	Y
2401.9	73.57	73.66	Р		1.0	73.66	106.8	115.0	-8.2	Pass	Z
2444 7	70.01	75.00	Р		1.0	70.01	110.0	115.0	2.0	Deet	v
2441.7 2441.7	<u>79.01</u> 77.97	75.22 74.23	P		1.0 1.0	79.01 77.97	112.2 111.1	115.0 115.0	-2.8 -3.9	Pass Pass	X Y
2441.7 2441.7	75.45	74.23	P		1.0	75.77	108.9	115.0	- <u>3.9</u> -6.1	Pass	Z
2441.1	70.40	15.11			1.0	13.11	100.9	115.0	-0.1	r a55	۷
2481.4	79.53	75.98	Р		1.0	79.53	112.7	115.0	-2.3	Pass	Х
2481.4	78.53	75.57	P		1.0	78.53	111.7	115.0	-3.3	Pass	Ŷ
2481.4	77.96	78.34	Р		1.0	78.34	111.5	115.0	-3.5	Pass	Z
			ľ								

Corrected Reading = Max of Horizontal/Vertical + Antenna Factor + cable loss - Preamp. @ 2401.9 MHz: 74.23 + 27.3 + 5.9 - 0 (no preamp) = 107.4

Spurious Limits

RSS-210 Annex 8.5

Spurious emissions were searched for from 1000 MHz to10 times the highest transmit frequency or 25000 MHz.

15.209: 74 Peak, 54 Ave., dBuV/m @ 3m. 15.205 Restricted bands, EUT complies.

Nemko USA	A, Inc.	11696 Sorren	to Valley Road, Suite F, San I Phone (858) 755-5525 Fa	0 /
DATE	DOCUMENT NA	ME	DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification FCC ID: BYMCOM2G4 IC		2008 0210169 FCC	23 of 30

Band Edge and Harmonics Verification

(BP200 was prototype model name.)

4962.8 7444.2 Measuremen 2400.0 2400.0 2400.0 2400.0 2400.0 2483.5 2483.5 2483.5	nts are all noise i 35.24 15.24 29.51 9.51 29.54 9.54 28.62	floor after the thin 33.44 13.44 29.51 9.51 29.35 9.35 28.62	d harmor P A P A A P A P A P		1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	35.24 15.24 29.51 9.51 29.54 9.54 28.62	68.4 48.4 62.7 42.7 62.7 42.7 61.8	74.0 54.0 74.0 54.0 74.0 54.0 74.0	-5.6 -5.6 -11.3 -11.3 -11.3 -11.3 -11.3 -12.2	Pass Pass Pass Pass Pass	Non-hopping no preamp Non-hopping no preamp Hopping no preamp Hopping no preamp Non-hopping no preamp Non-hopping no preamp Hopping no preamp
7444.2 Measuremen 2400.0 2400.0 2400.0 2400.0 2400.0 2483.5	35.24 15.24 29.51 9.51 29.54	33.44 13.44 29.51 9.51 29.35	P A P A P		1.0 1.0 1.0 1.0	15.24 29.51 9.51 29.54	48.4 62.7 42.7 62.7	54.0 74.0 54.0 74.0	-5.6 -11.3 -11.3 -11.3	Pass Pass Pass Pass	Non-hopping no preamp Hopping no preamp Hopping no preamp Non-hopping no preamp
7444.2 Measuremen 2400.0 2400.0 2400.0 2400.0	35.24 15.24 29.51 9.51	33.44 13.44 29.51 9.51	P A P A		1.0 1.0 1.0	15.24 29.51 9.51	48.4 62.7 42.7	54.0 74.0 54.0	-5.6 -11.3 -11.3	Pass Pass Pass	Non-hopping no preamp Hopping no preamp Hopping no preamp
7444.2 Measuremen 2400.0 2400.0 2400.0	35.24 15.24 29.51	33.44 13.44 29.51	P A P		1.0 1.0	15.24 29.51	48.4 62.7	54.0 74.0	-5.6 -11.3	Pass Pass	Non-hopping no preamp Hopping no preamp
7444.2 Measuremen 2400.0 2400.0	35.24 15.24	<u>33.44</u> 13.44	P A		1.0	15.24	48.4	54.0	-5.6	Pass	Non-hopping no preamp
7444.2 Measuremen 2400.0	35.24	33.44	Р								
7444.2 Measuremei				nic						_	
7444.2	ts are all noise	floor after the thin	d harmor	nic							
4962.8	58.2	58.2	P		1.0	58.2	60.9	74.0	-13.1	Pass	Noise floor with preamp
	55.4	55.4	Р		1.0	55.4	50.2	74.0	-23.8	Pass	Noise floor with preamp
2481.4											High Channel
Measuremei	nts are all noise i	floor after the thin	d harmor	nic			L				
7325.0	58.2	58.2	Р		1.0	58.2	61.1	74.0	-12.9	Pass	Noise floor with preamp
4883.3	54.2	54.2	Р		1.0	54.2	50.8	74.0	-23.2	Pass	
2441.7											Mid Channel
weasureme	ns are all noise i	noor alter the thin		110							
7205.8	59.6	59.6 floor after the thin		nic.	1.0	59.6	63.2	74.0	-10.8	Pass	Noise floor with preamp
4803.8	58.5	58.5	P P		1.0	58.5	55.1	74.0	-18.9		Noise floor with preamp
2401.9											Low Channel
(MHz)	Vertical	Horizontal		F/L/R/B	m	(dBµV)	(dBµV/m)	(dBµV/m)	(dB)		Comment
Freq.	Reading	Reading		Side	Height	Reading	Reading	limit	Diff.	Fail	
Meas.	Meter	Meter	Det.	EUT	Ant.	Max.	Corrected	Spec.	CR/SL	Pass	
Preamp H	F#	842	-					Measu	rements abov	e 1 GHz are	e Average values, unless otherwise stated.
Preamp L		<u>NA</u>	-	Pre	Select#:	NA	-				uasi-Peak values, unless otherwise stated.
Cable HF		<u>40ft</u>	-	-	QP #:	NA	-			L	Video Bandwidth 10 Hz
Cable LF#		NA	Sp	•	isplay #:	835	-			Average	RBW: <u>1 MHz</u>
DRG Ant.		752	-		ec An.#:		_				Video Bandwidth 3 MHz
Log Ant.#		NA	-		dity (%) :		-			Peak	RBW: <u>1 MHz</u>
Bicon Ant.		NA NA	-	Terr	np. (°C) :	5				QudSI-P	Video Bandwidth 300 kHz
Specificat Loop Ant.		FCC Part 15 NA	.2470,	15.209,	15.205(a)	-			Quasi-P	eak RBW: 120 kHz
Coorting	~ .		0470	15 000	15 005/-	`		Distance	> 1000	MHz:	<u>3 m</u>
						Distance			<u>3 m</u>		
EUT Conf	ig. :	Transmit					_	SOATS			X
EUT Seria							-	NOATS			
EUT Mode		BP200				-	Phase:	quonoy	•		
EUT Nam		HME RF Module					-	EUT Voi EUT Fre	0		60
Client Nar					Staff :	FSC	-	EUT Vol	togo :		120
NEX #:		100588		-		7:30AM	-				
Job # :		10169-1		-		2/6/2008	-	Page	1	of	
				R	adiated	d Emissio	ns Data				
ΝΕΜΚΟ Ι	JSA, Inc.								Fax: (8	358) 45	2-1810
										358) 75	
		Ð			•						A 92121
		Ne i									lquarters: Valley Rd.
(N	-										

Sample Computations:

Max Reading= Meter Reading +Antenna Factor +Cable Loss – PreAmp Gain 55.1 = 58.5 + 32.5 + 8.47 -44.4 (4803.8 MHz) 68.4= 35.24 + 27.3 + 5.9 – 0 (2400 MHz)

Nemko USA, Inc.		11696 Sorrento Valley Road, Suite F, San Diego, CA 92121 Phone (858) 755-5525 Fax (858) 452-1810		
DATE	DOCUMENT NAME		DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification Test Report FCC ID: BYMCOM2G4 IC: 1860A-COM2G4		2008 0210169 FCC	24 of 30

5.7. Number of Hopping Channels

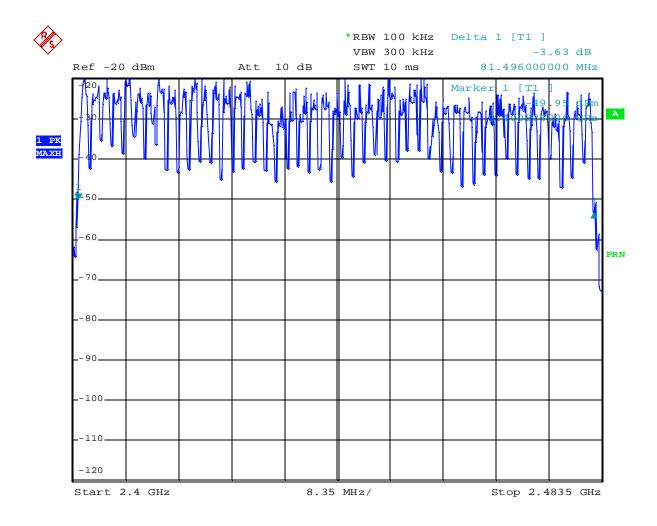
RSS-210 Annex 8.1(4)

(iii) Frequency hopping systems in the 2400-2483.5 MHz band may utilize hopping channels whose 20dB bandwidth is greater than 1 MHz provided the systems use at least 15 non-overlapping channels. The total span of hopping channels shall be at least 75 MHz.

At least 15 hopping channels – 47 counted.

Span = 81.496 MHz > 75 MHz

The result was validated with the original test report (G0M20306-7968-P-15 under the same FCC ID) with the same number of hopping channels (**47**).



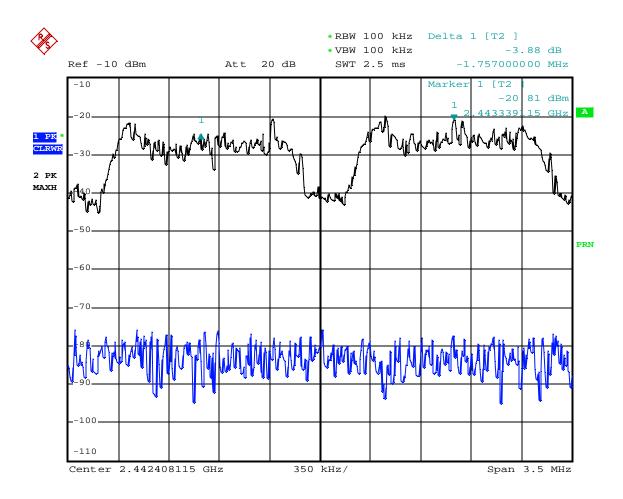
Nemko USA, Inc.		11696 Sorrento Valley Road, Suite F, San Diego, CA 92121 Phone (858) 755-5525 Fax (858) 452-1810		
DATE	DOCUMENT NAME		DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification Test Report FCC ID: BYMCOM2G4 IC: 1860A-COM2G4		2008 0210169 FCC	25 of 30

5.8. Channel Separation

15.247(a)(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125mW.

Frequency Separation: 1.757MHz

The result was validated with the original test report (G0M20306-7968-P-15 under the same FCC ID) with a Channel Separation of **1.74649299 MHz**



Date: 4.FEB.2008 18:00:29

Nemko USA, Inc.		11696 Sorrento Valley Road, Suite F, San Diego, CA 92121 Phone (858) 755-5525 Fax (858) 452-1810		
DATE	DOCUMENT NAME		DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification Test Report FCC ID: BYMCOM2G4 IC: 1860A-COM2G4		2008 0210169 FCC	26 of 30

5.9. Time of Occupancy

RSS-210 Annex 8.1(4)

15.247 (a)(1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

47 channels x 0.4 Seconds = 18.8 seconds.

400 us on time each time emission is on in channel selected at random.

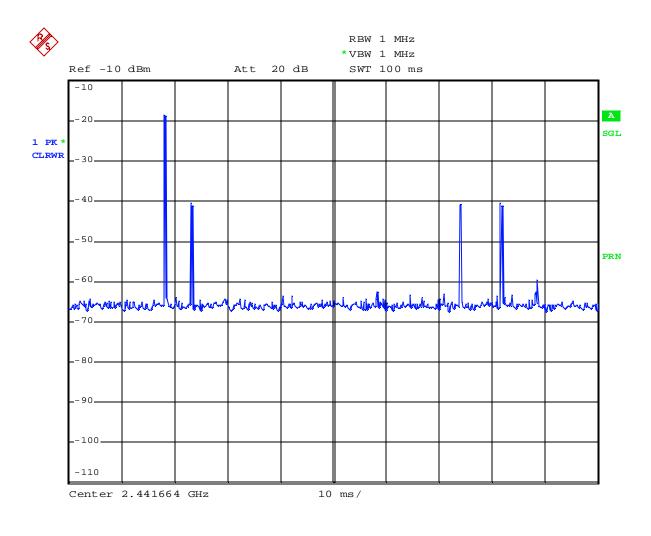
40 count for channel emissions in 18.8 seconds - page 29.

40 x 0.4 ms = **16.0 ms**

16 ms < 0.4 seconds

The result was validated with the original test report (G0M20306-7968-P-15 under the same FCC ID) with a Time of Occupancy of **16.28ms**

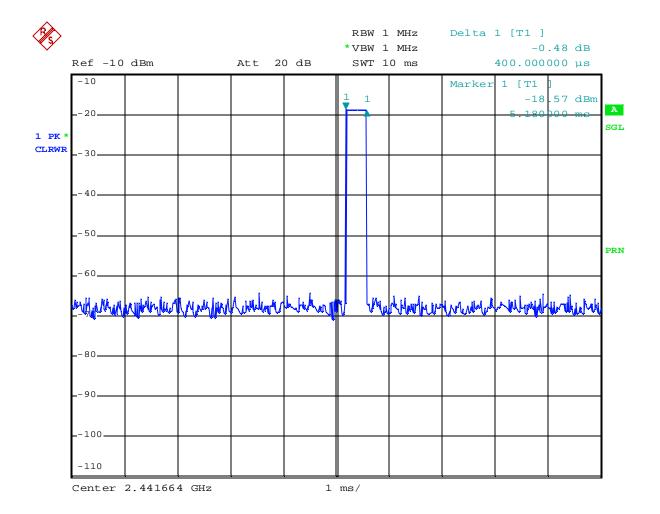
Nemko USA, Inc.		11696 Sorrento Valley Road, Suite F, San Diego, CA 92121 Phone (858) 755-5525 Fax (858) 452-1810		
DATE	DOCUMENT NAME		DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification Test Report FCC ID: BYMCOM2G4 IC: 1860A-COM2G4		2008 0210169 FCC	27 of 30



Date: 5.FEB.2008 10:44:43

Test Notes: Measurement is radiated. EUT will not transmit without a base station. Additional signals are from base station.

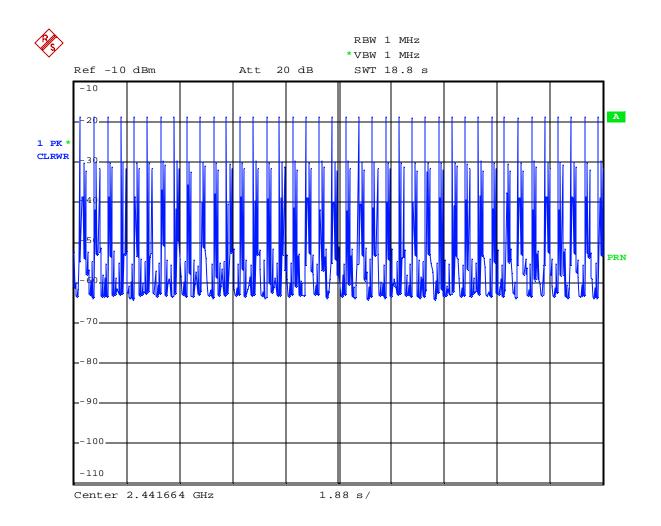
Nemko USA, Inc.		11696 Sorrento Valley Road, Suite F, San Diego, CA 92121 Phone (858) 755-5525 Fax (858) 452-1810		
DATE	DOCUMENT NAME		DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification Test Report FCC ID: BYMCOM2G4 IC: 1860A-COM2G4		2008 0210169 FCC	28 of 30



Date: 5.FEB.2008 10:50:55

Nemko USA, Inc.		11696 Sorrento Valley Road, Suite F, San Diego, CA 92121 Phone (858) 755-5525 Fax (858) 452-1810		
DATE	DOCUMENT NAME		DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification Test Report FCC ID: BYMCOM2G4 IC: 1860A-COM2G4		2008 0210169 FCC	29 of 30

Count 40 Channel Emissions in 18.8 seconds.



Date: 5.FEB.2008 10:52:59

Nemko USA, Inc.		11696 Sorrento Valley Road, Suite F, San Diego, CA 92121 Phone (858) 755-5525 Fax (858) 452-1810		
DATE	DOCUMENT NAME		DOCUMENT #	PAGE
Feb. 6, 2008	COM2G4 Certification Test Report FCC ID: BYMCOM2G4 IC: 1860A-COM2G4		2008 0210169 FCC	30 of 30

5.10. Test Equipment

Nemko				Serial		Cal Due
ID	Device	Manufacturer	Model	Number	Cal Date	Date
113	Antenna, Bicon	EMCO	3104	2996	15-Nov-07	15-Nov-08
111	Antenna, LPA	EMCO	3146	1382	03-Oct-07	03-Oct-08
902	pre amp	Sonoma	310 N	185803	10-Jul-07	10-Jul-08
674	Spectrum Analyzer	HP	8568B	2007A00910	13-Mar-07	13-Mar-08
675	Spectrum Analyzer Display	HP	85662A	2005A01282	13-Mar-07	13-Mar-08
676	Quasi-Peak Adapter	HP	85650A	2430A00576	13-Mar-07	13-Mar-08
835	Spectrum Analyzer	Rohde & Schwarz	RHDFSEK	829058/005	20-Jun-07	20-Jun-08
752	Antenna, DRWG	EMCO	3115	4943	31-Oct-07	31-Oct-08
842	Preamp	Nemko	N/A	N/A	Verified	2/6/2008
685	Transient Limiter	HP	11974A	3107A02637	05-Sep-07	05-Sep-08
574	High Pass Filter	Solar	7801-5.0	853135	09-Jul-07	09-Jul-08
395	LISN	Solar	9348-50-R-	941718	09-Mar-07	09-Mar-08
375	LISIN	50141	24-BNC	741/10	07-11141-07	07-11141-00
625	Antenna, Dbl Ridge Horn	EMCO	3116	2325	Verifie	d 1/3/08