Nemko USA, Inc.
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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

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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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 Laudani
EMC Engineer

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 – 10th 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 Laudani
EMC Engineer

Refer to the test results section for further details.

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

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

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.

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.

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.

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.

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

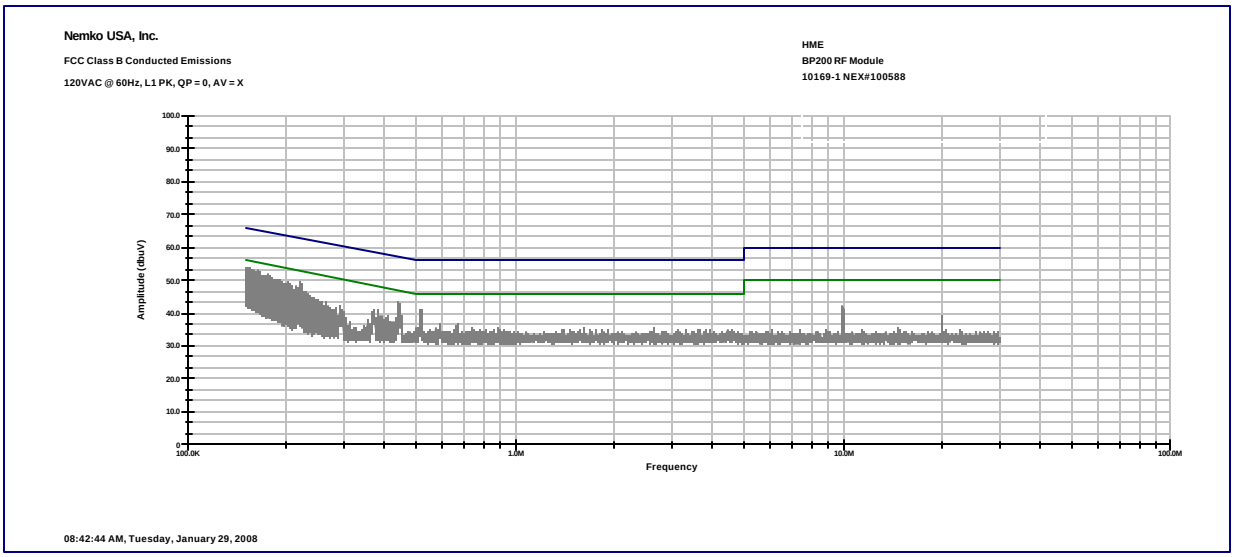
Example Frequency = 110MHz
18.5 dBuV (spectrum analyzer reading)
+3.0 dB (cable loss @ frequency)
21.5 dBuV
+15.4 dB/m (antenna factor @ frequency)
36.9 dBuV/m Final adjusted value

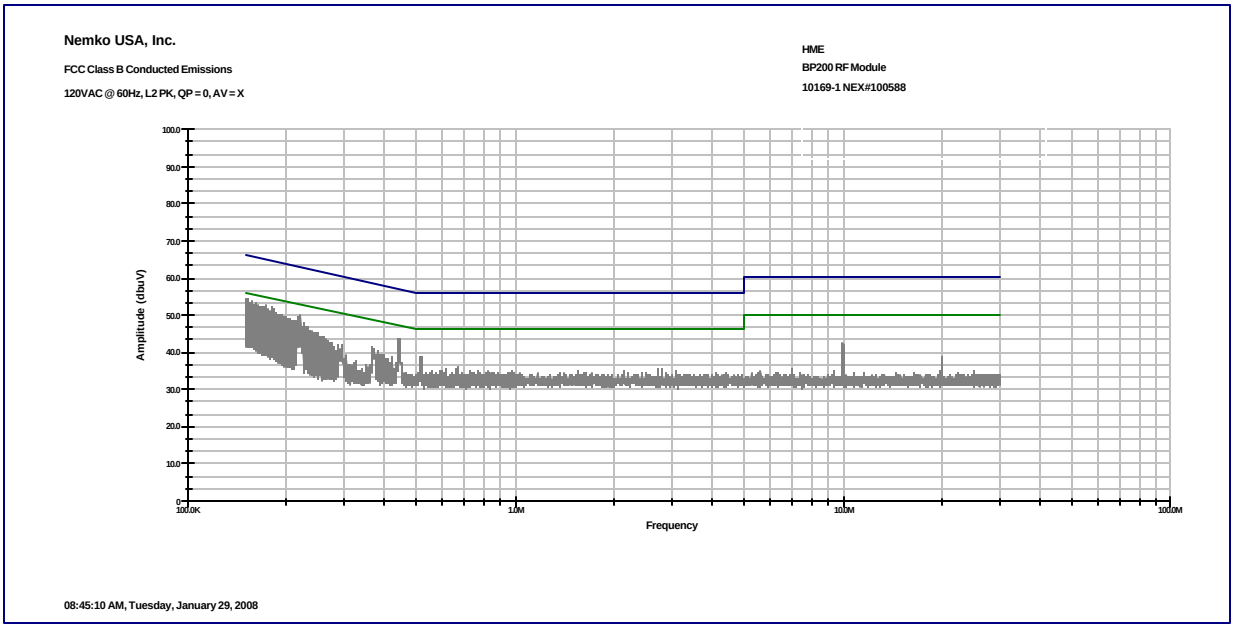
The final adjusted value is then compared to the appropriate emission limit to determine compliance.

5. Test Results

5.1. Conducted Emissions Test Data – Transmit Mode

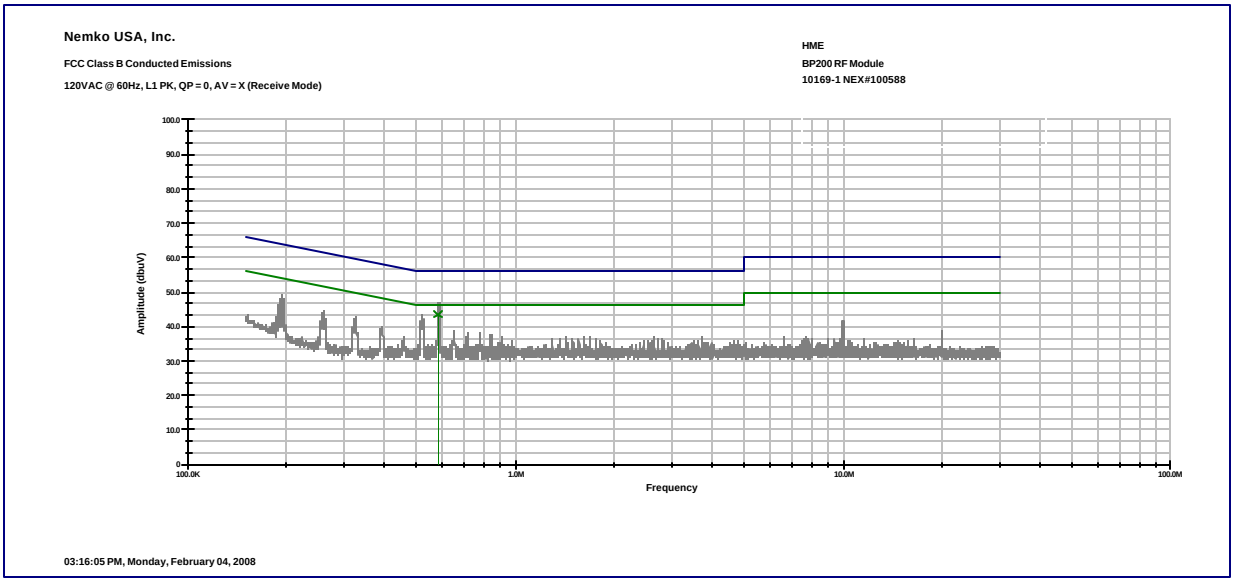
Client	HME	Temperature	74	°F
PAN #	10169-1	Relative Humidity	45	%
EUT Name	RF Module	Barometric Pressure	30.21	Hg
EUT Model	COM2G4 (BP200 was prototype model name.)	Test Location	Enclosure 1	
Governing Doc	CFR 47, Part 15B	Test Engineer	Ferdinand Custodio	
Basic Standard	Sec. 15.207	Date	January 29, 2008	
Parameters	Peak RF BW: 100kHz VBW: 100kHz Peak less than Average Limits; therefore, Quasi-Peak and Average Detectors not required.			

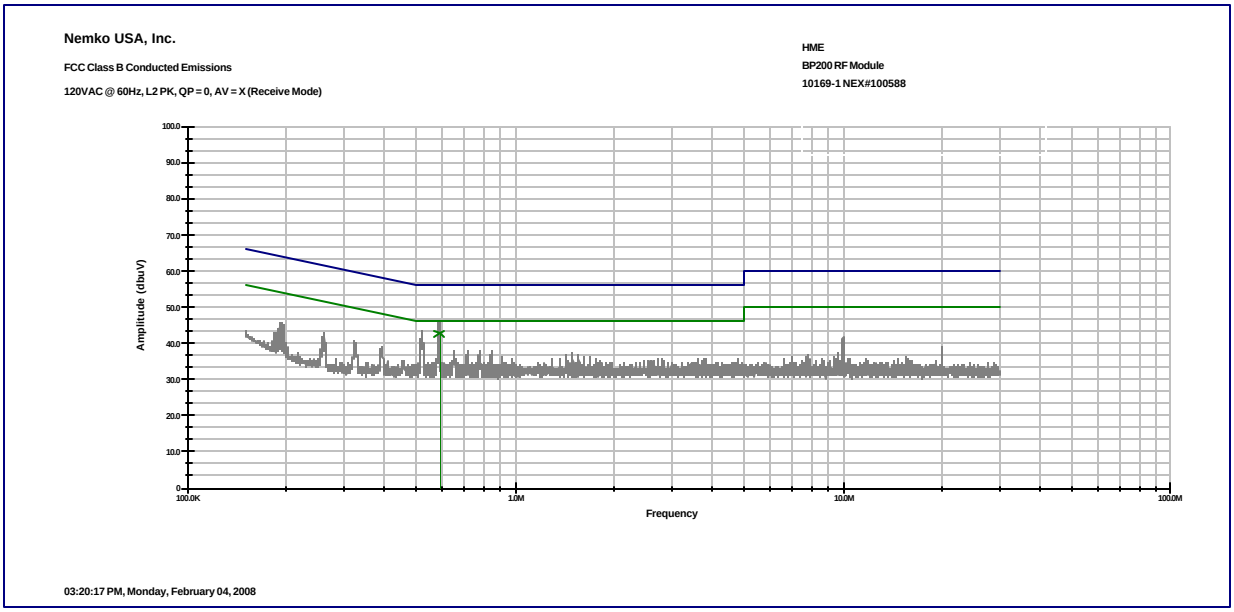




5.2. Conducted Emissions Test Data – Receive mode

Client	HME	Temperature	74	°F
PAN #	10169-1	Relative Humidity	45	%
EUT Name	RF Module	Barometric Pressure	30.21	Hg
EUT Model	COM2G4 (BP200 was prototype model name.)	Test Location	Enclosure 1	
Governing Doc	CFR 47, Part 15B	Test Engineer	Ferdinand Custodio	
Basic Standard	Sec. 15.107	Date	January 29, 2008	
Parameters	Peak RF BW: 100kHz VBW: 100kHz			
Legend	Blue (Top) Line is Quasi Peak. Green (Bottom) Line is Average.			





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 # :	10169-1	Date :	1/29/2008	Page 1 of 1	
NEX #:	100588	Time :	10:30AM		
		Staff :	FSC		
Client Name :	HME			EUT Voltage :	120
EUT Name :	Wireless Speaker			EUT Frequency :	60
EUT Model # :	BP200 within WS200			Phase:	1
EUT Serial # :				NOATS	
EUT Config. :	Receive mode			SOATS	X
				Distance < 1000 MHz:	3 m
				Distance > 1000 MHz:	3 m
Specification :	CFR47 Part 15, Subpart C 15.209				
Loop Ant. #:	NA				
Bicon Ant.#:	113	Temp. (°C) :	12		
Log Ant.#:	111	Humidity (%) :	88		
DRG Ant. #	NA	Spec An.#:	674		
Cable LF#:	SOATS	Spec An. Display #:	675		
Cable HF#:	NA	QP #:	676		
Preamp LF#:	902	PreSelect#:	NA		
Preamp HF#	NA				

Quasi-Pe	RBW: 120 kHz
	Video Bandwidth 300 kHz
Peak	RBW: 1 MHz
	Video Bandwidth 3 MHz
Average	RBW: 1 MHz
	Video Bandwidth 10 Hz

Measurements below 1 GHz are Quasi-Peak values, unless otherwise stated.
Measurements above 1 GHz are Average values, unless otherwise stated.

Meas. Freq. (MHz)	Meter Reading **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	48.6	Q		1.0	48.6	27.9	40.0	-12.1	Pass	Ambient noise
42.0	47.3	44.8	Q		1.0	47.3	26.7	40.0	-13.3	Pass	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

(BP200 was prototype model name.)

Radiated Emissions Data

Job # : 10169-1 Date : 1/29/2008 Page 1 of 1
NEX #: 100588 Time : 10:30AM
Staff : FSC

Client Name : HME
EUT Name : Wireless Speaker
EUT Model # : BP200 within WS200
EUT Serial # :
EUT Config. : Transmit mode

EUT Voltage : 120
EUT Frequency : 60
Phase: 1
NOATS
SOATS X
Distance < 1000 MHz: 3 m
Distance > 1000 MHz: 3 m

Specification : CFR47 Part 15, Subpart C 15.209
Loop Ant. #: NA
Bicon Ant.#: 113 Temp. (°C) : 12
Log Ant.#: 111 Humidity (%) : 88
DRG Ant. # NA Spec An.#: 674
Cable LF#: SOATS Spec An. Display #: 675
Cable HF#: NA QP #: 676
Preamp LF#: 902 PreSelect#: NA
Preamp HF# NA

Quasi-Pe	RBW: 120 kHz
	Video Bandwidth 300 kHz
Peak	RBW: 1 MHz
	Video Bandwidth 3 MHz
Average	RBW: 1 MHz
	Video Bandwidth 10 Hz

Measurements below 1 GHz are Quasi-Peak values, unless otherwise stated.
Measurements above 1 GHz are Average values, unless otherwise stated.

Meas. Freq. (MHz)	Meter Reading **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	48.6	Q		1.0	48.6	27.9	40.0	-12.1	Pass	Ambient noise
42.0	47.3	44.8	Q		1.0	47.3	26.7	40.0	-13.3	Pass	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

5.3. Duty Cycle Measurement

RSS-210 Annex 8.1(4)

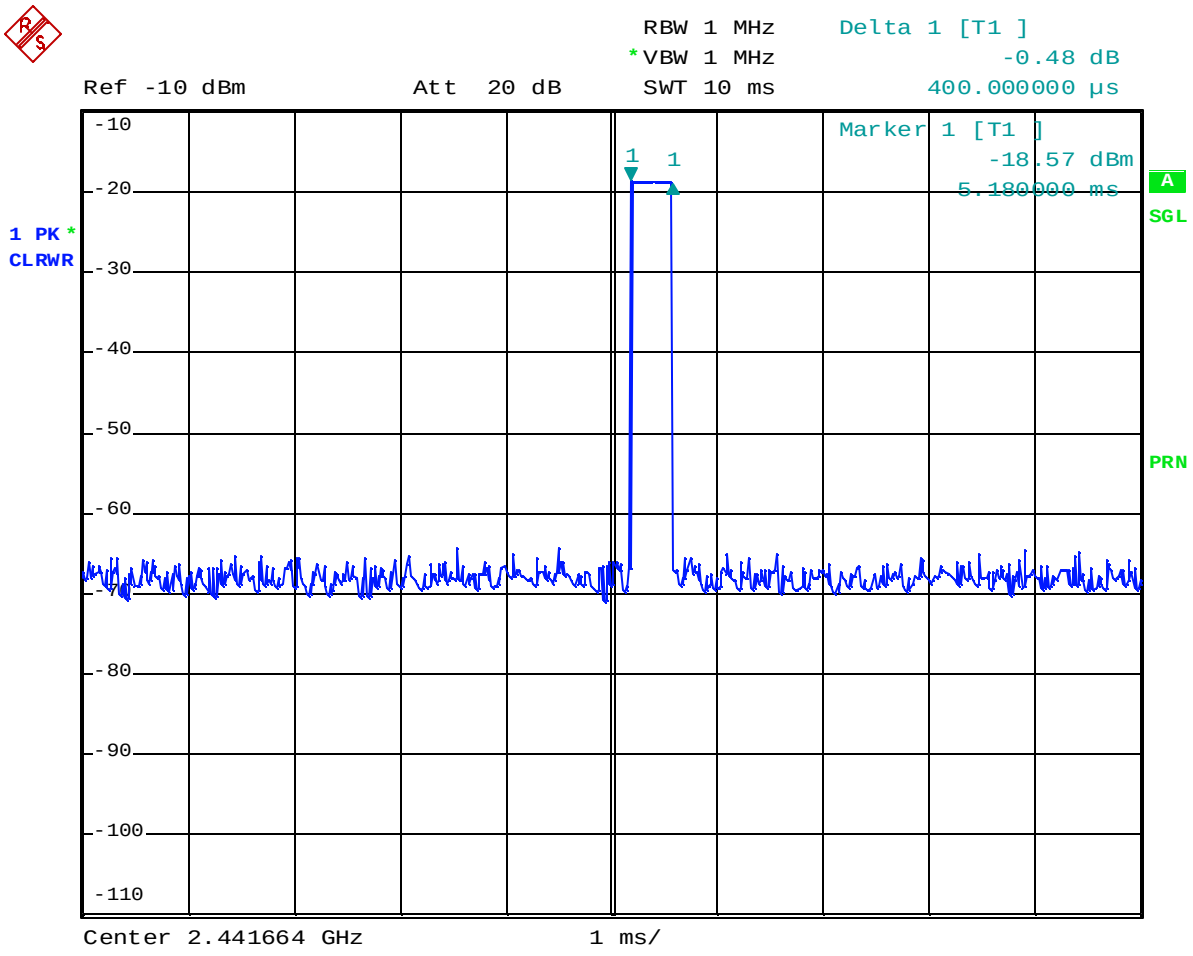
Digital Word = 400 microseconds

Duty cycle = 400 microseconds in 100ms

Duty cycle = 0.004

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

FCC limits DCF to –20dB



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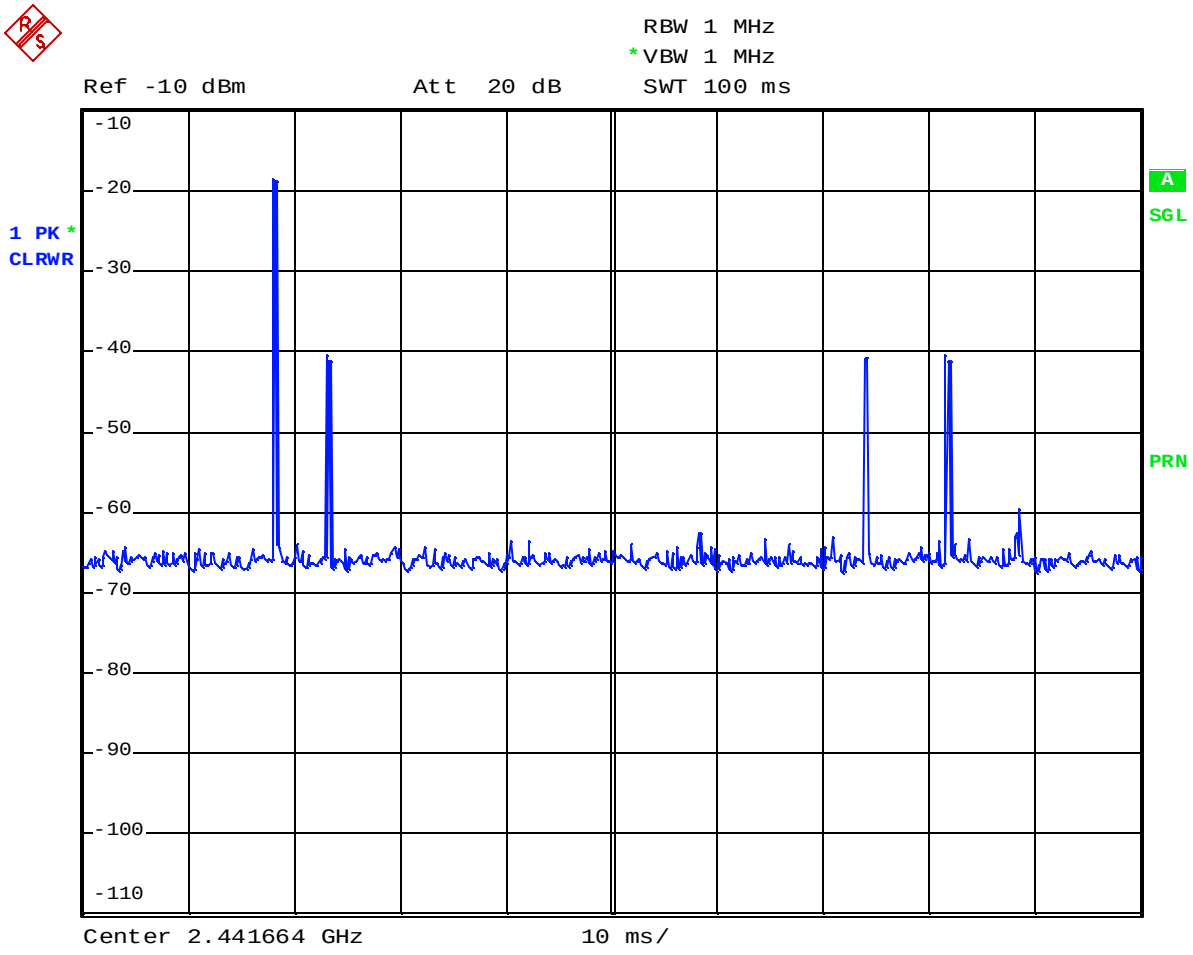

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5.4. Bandwidth

RSS-210 Annex 8.1(4)

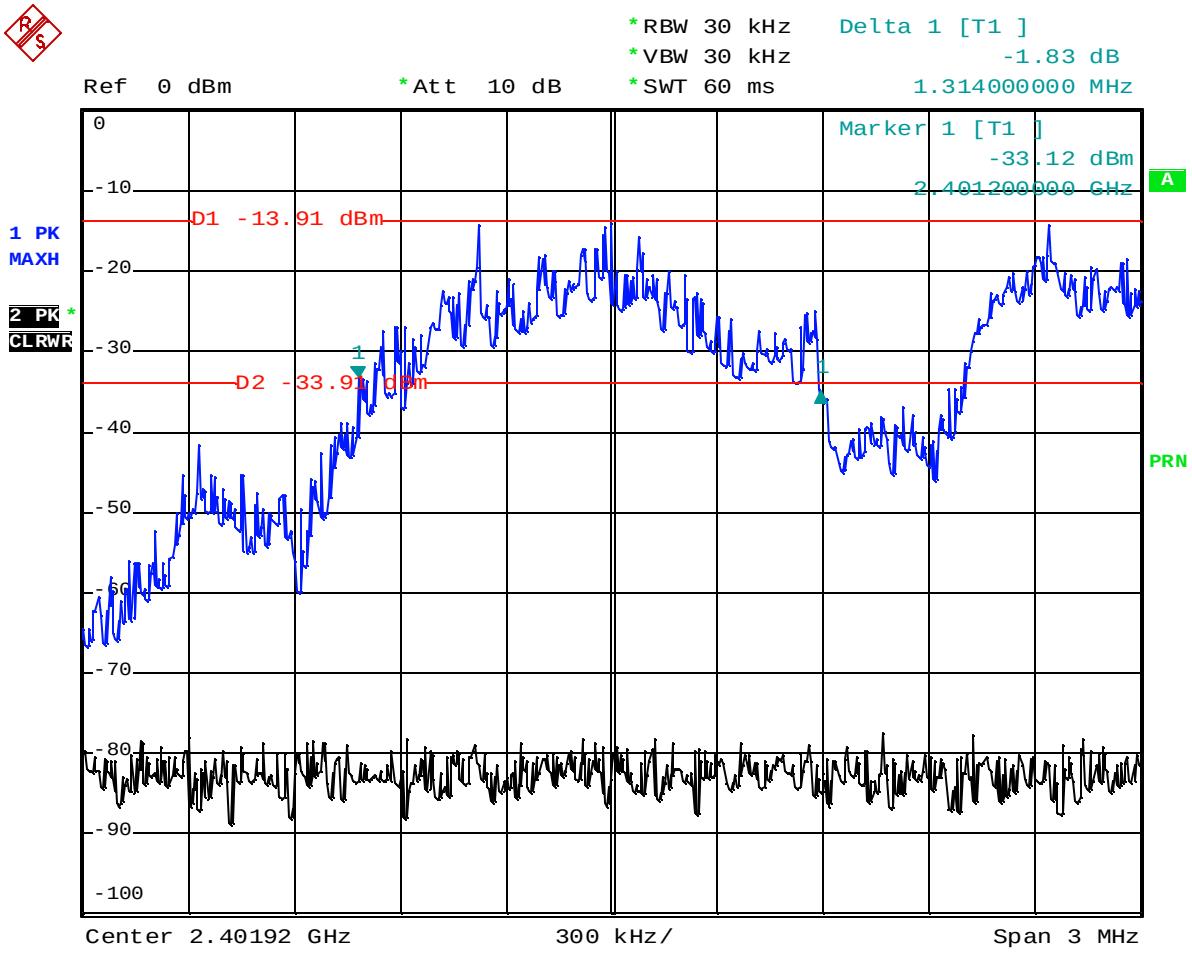
(a)(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies 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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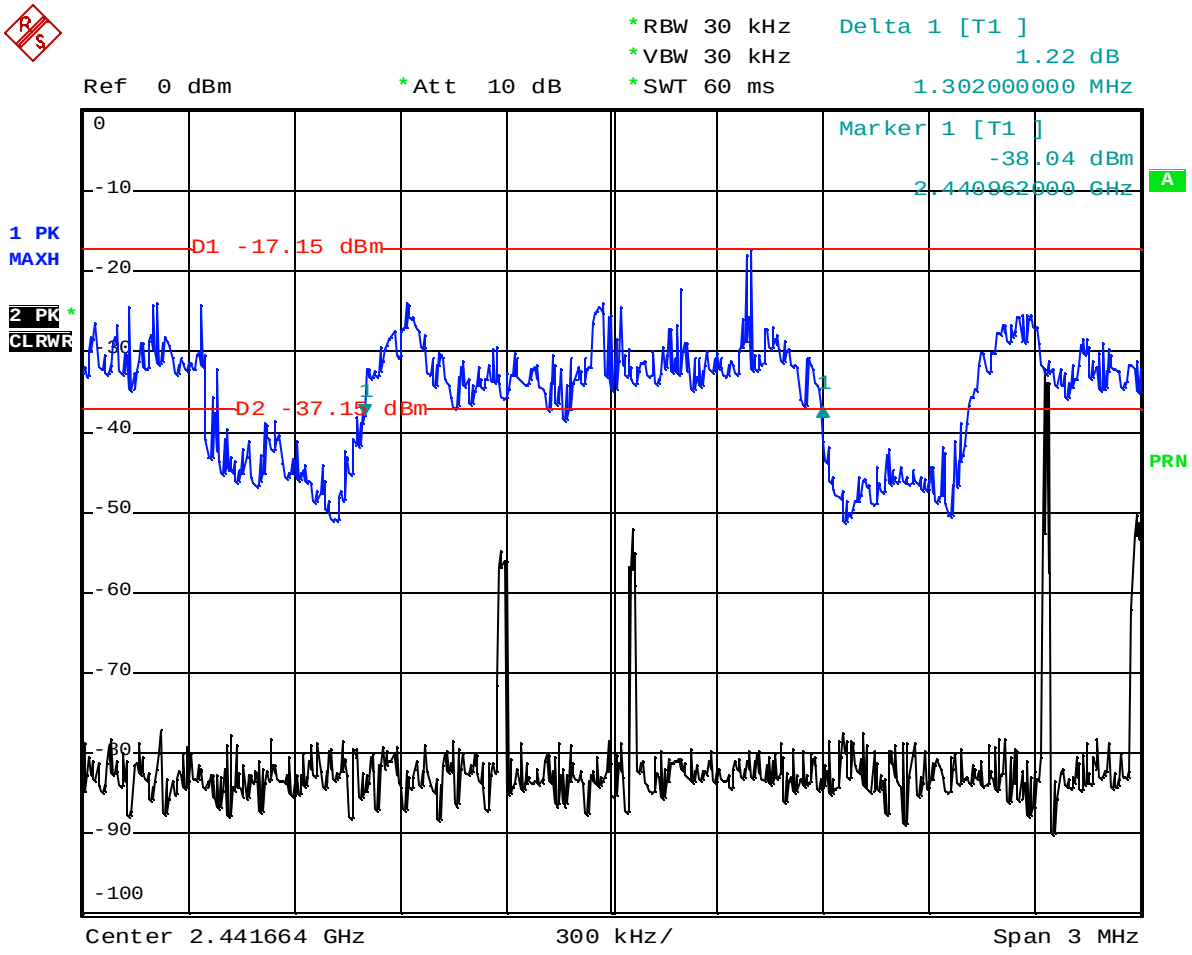
Low Channel

Higher Bandwidth



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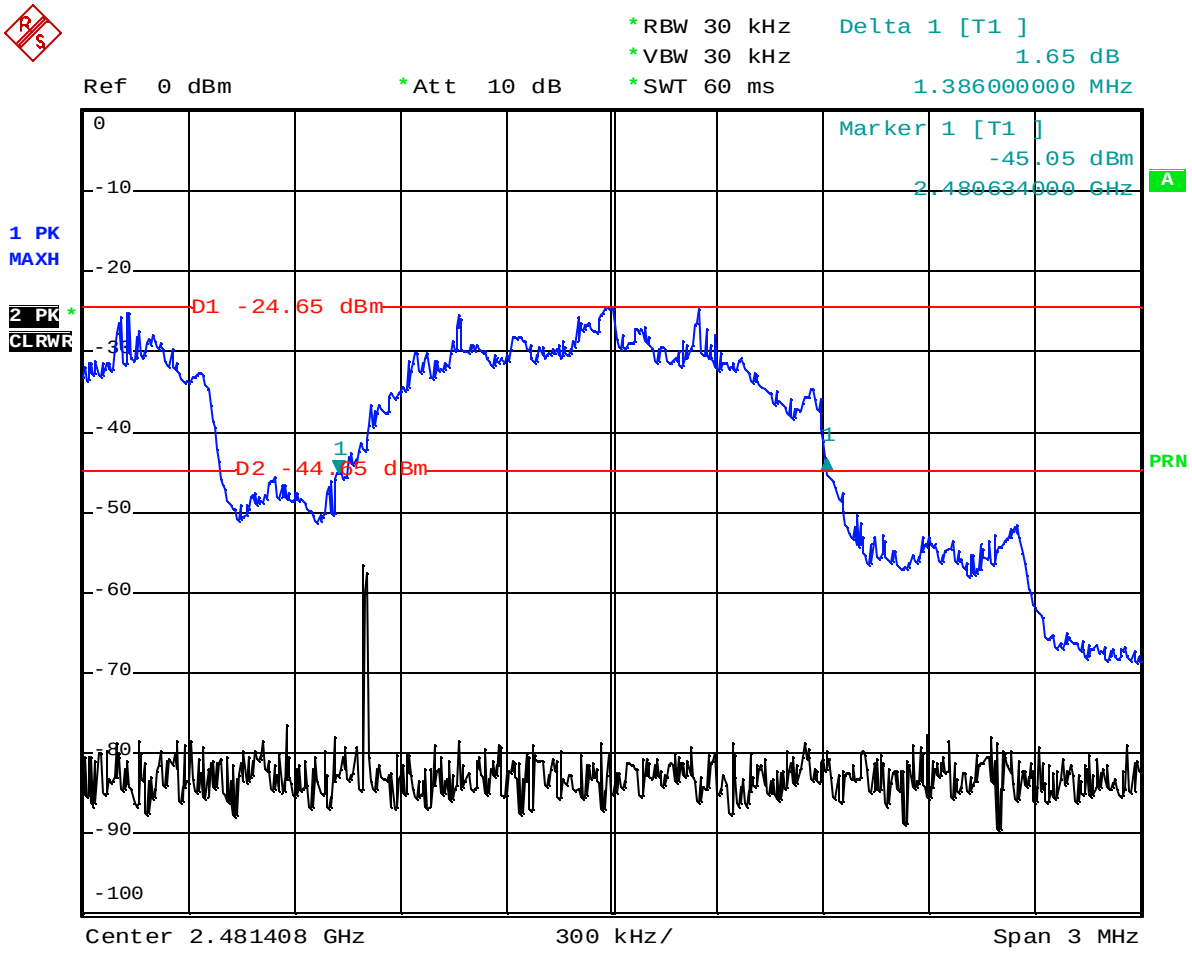
Mid Channel



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High Channel

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.

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

$[(\text{Field Strength in V/m x 3m})/5.5]^2$ = 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 = 17.47dBm

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

5.6. Fundamental Emissions

(BP200 was prototype model name.)

NEMKO USA, Inc.

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Radiated Emissions Data

Job # :	10169-1	Date :	1/29/2008	Page	1 of 1
NEX #:	100588	Time :	2:30PM		
		Staff :	FSC		
Client Name :	HME			EUT Voltage :	120
EUT Name :	RF Module			EUT Frequency :	60
EUT Model # :	BP200			Phase:	1
EUT Serial # :				NOATS	
EUT Config. :	Transmit			SOATS	X
				Distance < 1000 MHz:	3 m
				Distance > 1000 MHz:	3 m
Specification :	FCC Part 15.247C, 15.209, 15.205(a)				
Loop Ant. #:	NA				
Bicon Ant.#:	NA	Temp. (°C) :	12		
Log Ant.#:	NA	Humidity (%) :	88		
DRG Ant. #	752	Spec An.#:	NA		
Cable LF#:	NA	Spec An. Display #:	835		
Cable HF#:	40ft	QP #:	NA		
Preamp LF#:	NA	PreSelect#:	NA		
Preamp HF#	NA				

Quasi-Peak	RBW:	120 kHz
	Video Bandwidth	300 kHz
Peak	RBW:	1 MHz
	Video Bandwidth	3 MHz
Average	RBW:	1 MHz
	Video Bandwidth	10 Hz

Measurements below 1 GHz are Quasi-Peak values, unless otherwise stated.

Measurements above 1 GHz are Average values, unless otherwise stated.

Meas. Freq. (MHz)	Meter Reading **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
2401.9	74.23	72.45	P		1.0	74.23	107.4	115.0	-7.6	Pass	X
2401.9	74.12	72.13	P		1.0	74.12	107.3	115.0	-7.7	Pass	Y
2401.9	73.57	73.66	P		1.0	73.66	106.8	115.0	-8.2	Pass	Z
2441.7	79.01	75.22	P		1.0	79.01	112.2	115.0	-2.8	Pass	X
2441.7	77.97	74.23	P		1.0	77.97	111.1	115.0	-3.9	Pass	Y
2441.7	75.45	75.77	P		1.0	75.77	108.9	115.0	-6.1	Pass	Z
2481.4	79.53	75.98	P		1.0	79.53	112.7	115.0	-2.3	Pass	X
2481.4	78.53	75.57	P		1.0	78.53	111.7	115.0	-3.3	Pass	Y
2481.4	77.96	78.34	P		1.0	78.34	111.5	115.0	-3.5	Pass	Z

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.

Band Edge and Harmonics Verification

(BP200 was prototype model name.)

NEMKO USA, Inc.

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Radiated Emissions Data

Job # :	10169-1	Date :	2/6/2008	Page 1 of 1	
NEX #:	100588	Time :	7:30AM		
		Staff :	FSC		
Client Name :	HME			EUT Voltage :	120
EUT Name :	RF Module			EUT Frequency :	60
EUT Model # :	BP200			Phase:	1
EUT Serial # :				NOATS	
EUT Config. :	Transmit			SOATS	X
				Distance < 1000 MHz:	3 m
				Distance > 1000 MHz:	3 m
Specification :	FCC Part 15.247C, 15.209, 15.205(a)				
Loop Ant. #:	NA				
Bicon Ant.#:	NA	Temp. (°C) :	5		
Log Ant.#:	NA	Humidity (%) :	79		
DRG Ant. #	752	Spec An.#:	NA		
Cable LF#:	NA	Spec An. Display #:	835		
Cable HF#:	40ft	QP #:	NA		
Preamp LF#:	NA	PreSelect#:	NA		
Preamp HF#	842				

Quasi-Peak	RBW: 120 kHz
	Video Bandwidth 300 kHz
Peak	RBW: 1 MHz
	Video Bandwidth 3 MHz
Average	RBW: 1 MHz
	Video Bandwidth 10 Hz

Measurements below 1 GHz are Quasi-Peak values, unless otherwise stated.

Measurements above 1 GHz are Average values, unless otherwise stated.

Meas. Freq. (MHz)	Meter Reading **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
2401.9											Low Channel
4803.8	58.5	58.5	P		1.0	58.5	55.1	74.0	-18.9	Pass	Noise floor with preamp
7205.8	59.6	59.6	P		1.0	59.6	63.2	74.0	-10.8	Pass	Noise floor with preamp
Measurements are all noise floor after the third harmonic											
2441.7											Mid Channel
4883.3	54.2	54.2	P		1.0	54.2	50.8	74.0	-23.2	Pass	Noise floor with preamp
7325.0	58.2	58.2	P		1.0	58.2	61.1	74.0	-12.9	Pass	Noise floor with preamp
Measurements are all noise floor after the third harmonic											
2481.4											High Channel
4962.8	55.4	55.4	P		1.0	55.4	50.2	74.0	-23.8	Pass	Noise floor with preamp
7444.2	58.2	58.2	P		1.0	58.2	60.9	74.0	-13.1	Pass	Noise floor with preamp
Measurements are all noise floor after the third harmonic											
2400.0	35.24	33.44	P	L	1.0	35.24	68.4	74.0	-5.6	Pass	Non-hopping no preamp
2400.0	15.24	13.44	A	L	1.0	15.24	48.4	54.0	-5.6	Pass	Non-hopping no preamp
2400.0	29.51	29.51	P	L	1.0	29.51	62.7	74.0	-11.3	Pass	Hopping no preamp
2400.0	9.51	9.51	A	L	1.0	9.51	42.7	54.0	-11.3	Pass	Hopping no preamp
2483.5	29.54	29.35	P	L	1.0	29.54	62.7	74.0	-11.3	Pass	Non-hopping no preamp
2483.5	9.54	9.35	A	L	1.0	9.54	42.7	54.0	-11.3	Pass	Non-hopping no preamp
2483.5	28.62	28.62	P	L	1.0	28.62	61.8	74.0	-12.2	Pass	Hopping no preamp
2483.5	8.62	8.62	A	L	1.0	8.62	41.8	54.0	-12.2	Pass	Hopping no preamp

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)

5.7. Number of Hopping Channels

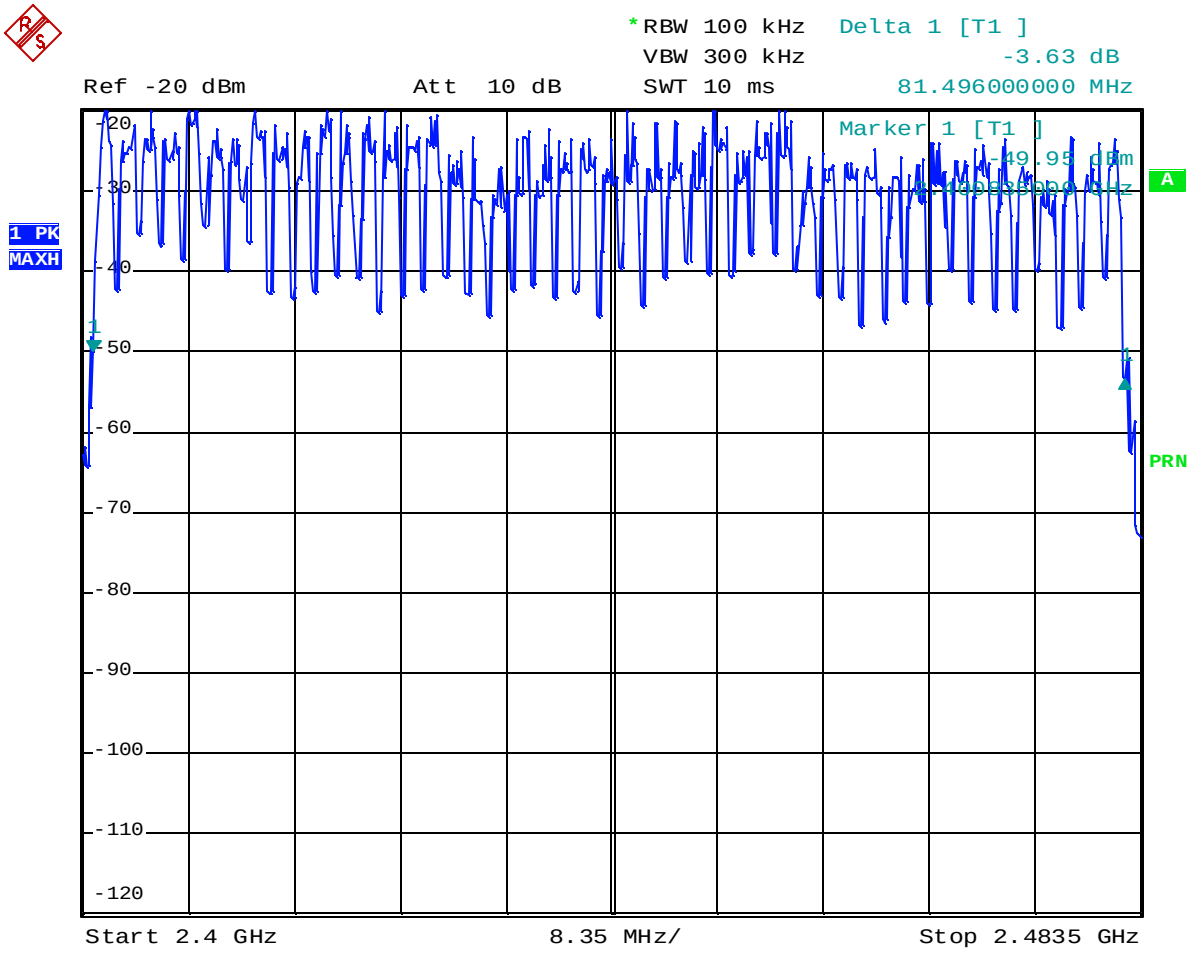
RSS-210 Annex 8.1(4)

(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**).



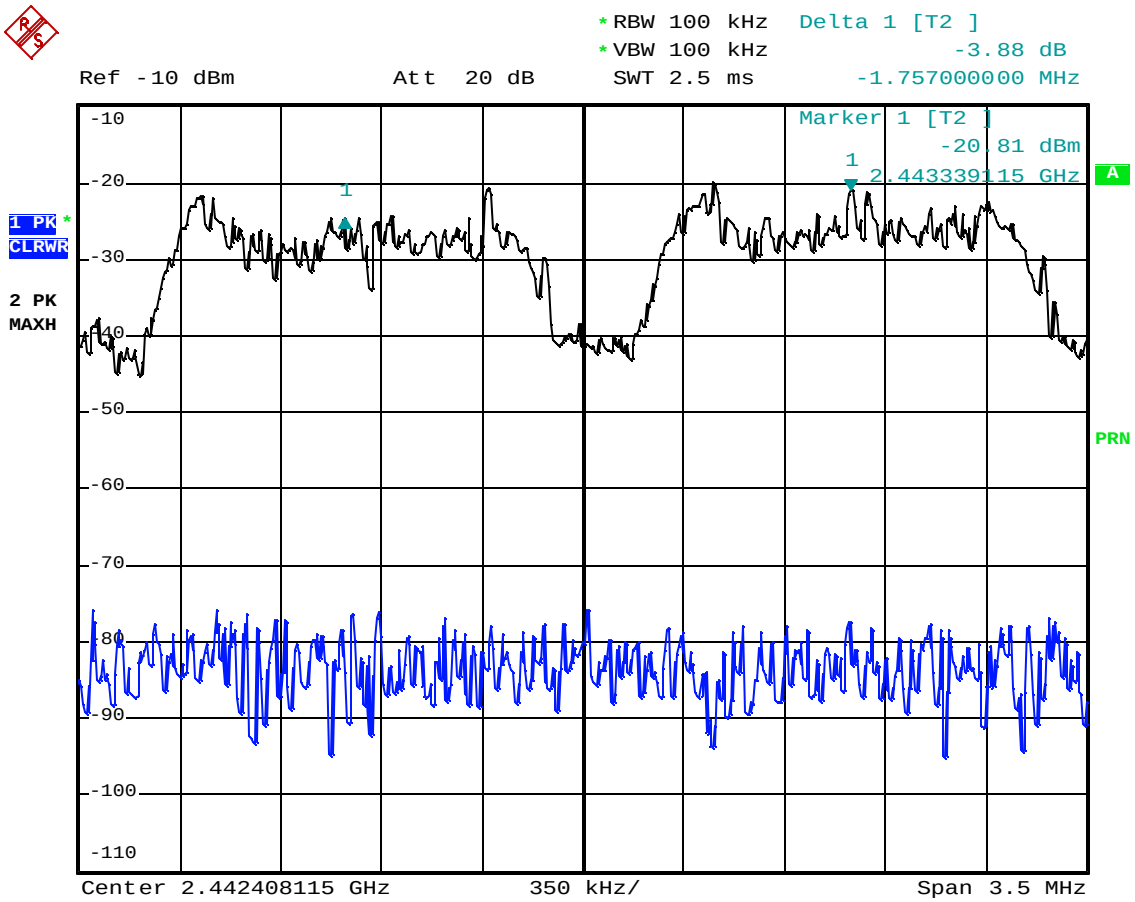
Date: 4.FEB.2008 17:37:24

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

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.

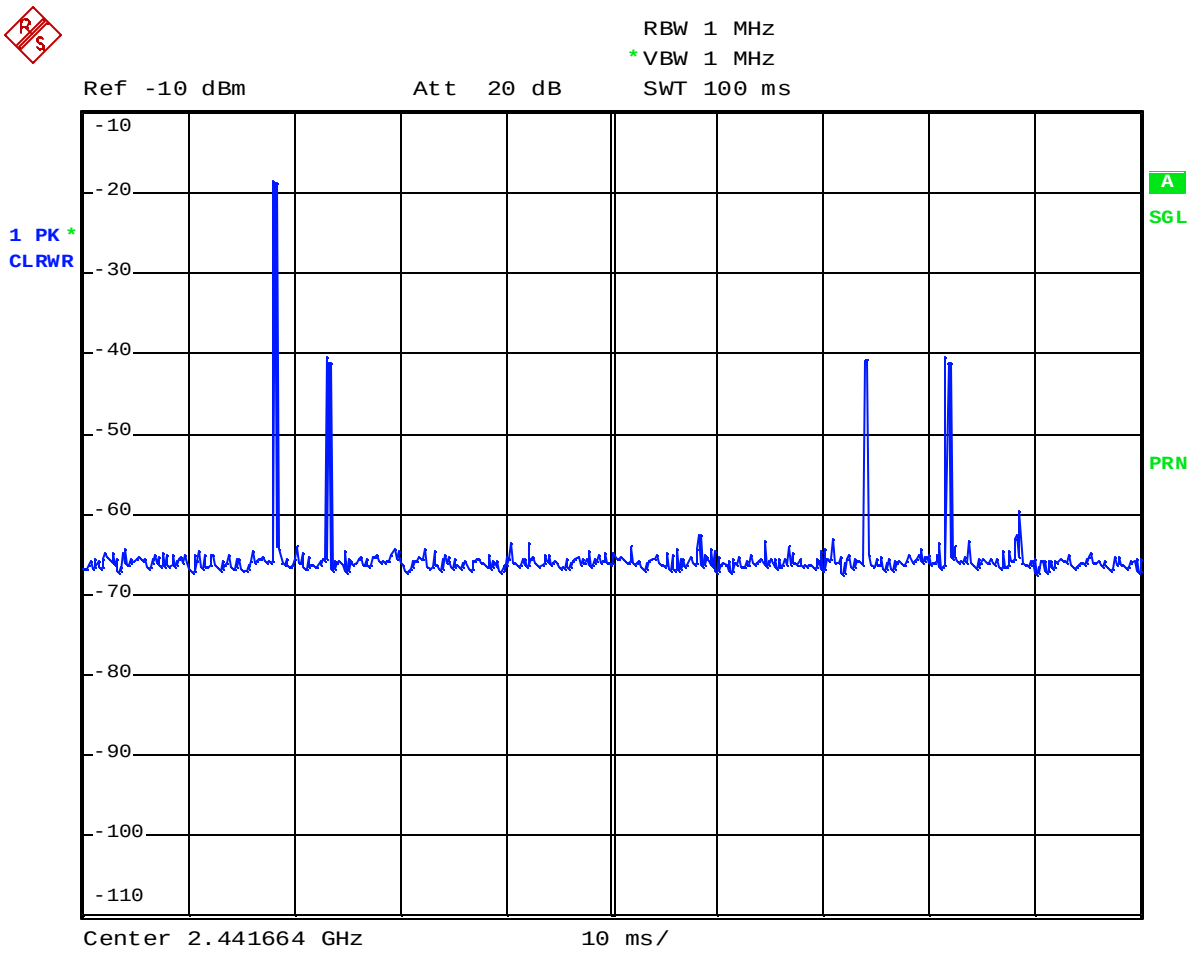
400 us on time each time emission is on in channel selected at random.

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

40 x 0.4 ms = **16.0 ms**

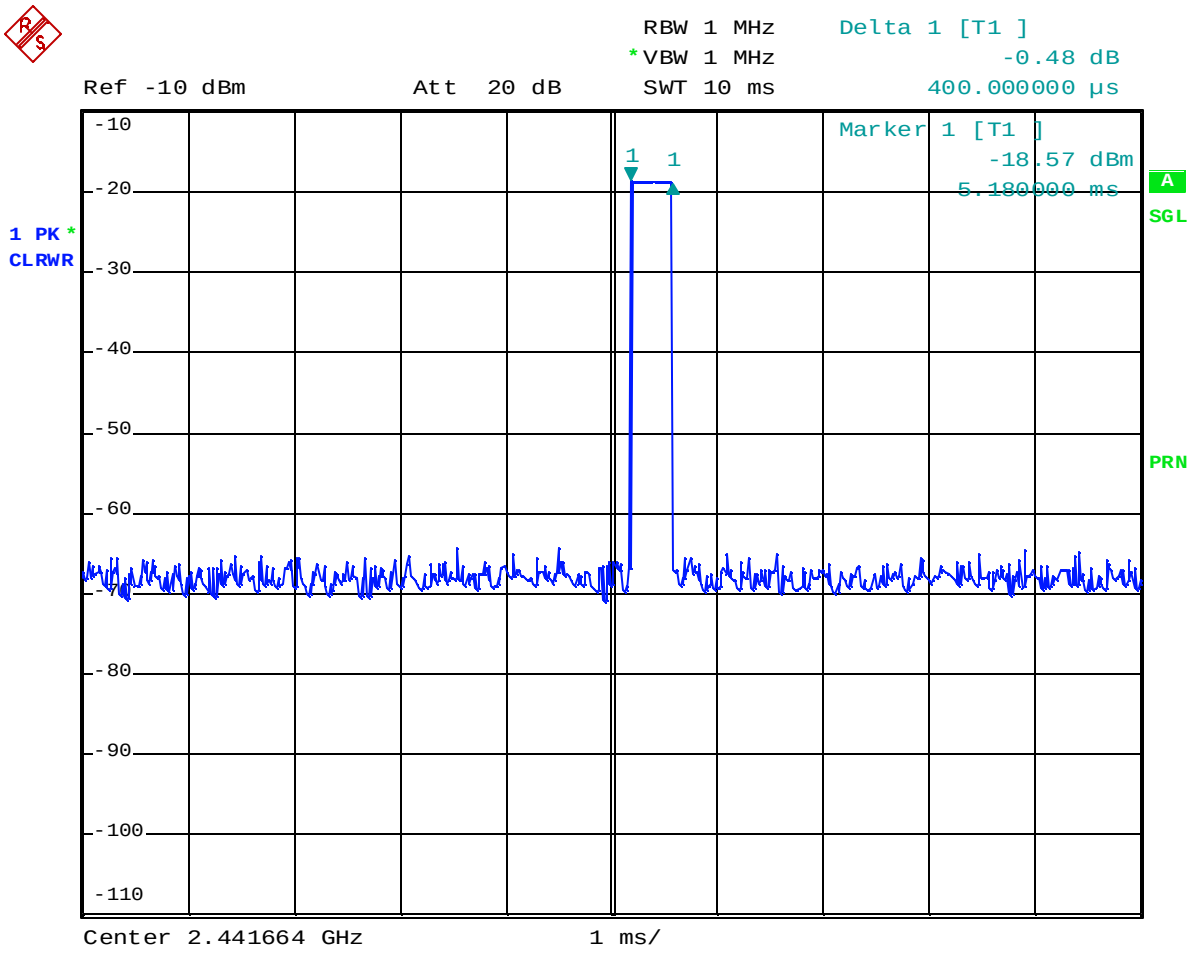
16 ms < 0.4 seconds

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**



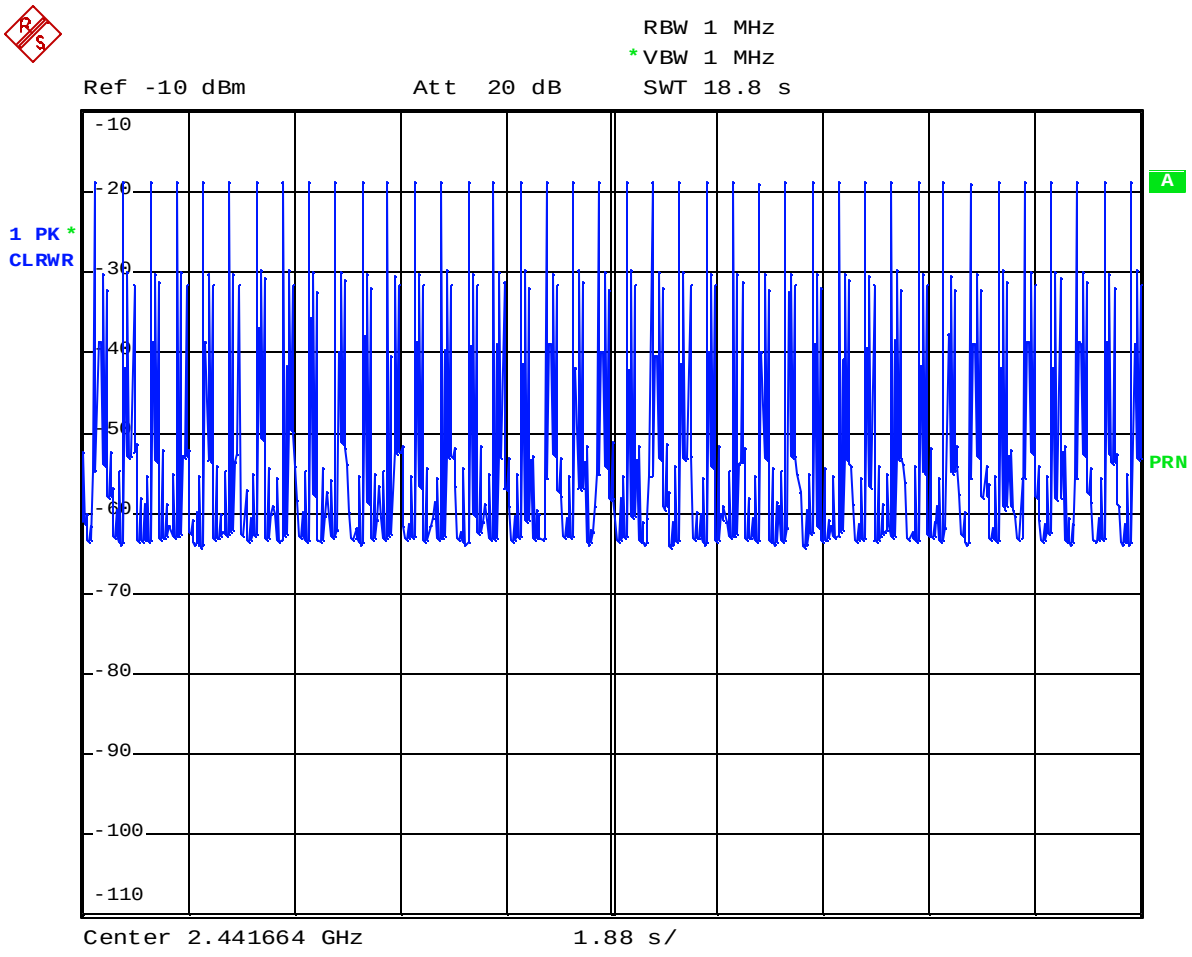
Date: 5.FEB.2008 10:44:43

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



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

Count 40 Channel Emissions in 18.8 seconds.



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

5.10. Test Equipment

Nemko ID	Device	Manufacturer	Model	Serial Number	Cal Date	Cal Due 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-24-BNC	941718	09-Mar-07	09-Mar-08
625	Antenna, Dbl Ridge Horn	EMCO	3116	2325	Verified 1/3/08	