Nemko USA, Inc.
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CERTIFICATION TEST REPORT

FCC Part 15 Subpart C, 15.247

IC RSS-210 Issue 8 December 2010

IC RSS-Gen Issue 3 December 2010

For The Access Point
Model: CB951

FCC ID: J69CB951
IC: 1809A-CB951

PREPARED FOR:

Indyme Solutions, Inc.
8295 Aero Place
San Diego, CA 92123

Prepared on: April 12, 2010
Report Number: 2010 04130097A FCC Rev. 1
Revised Sept. 13, 2011
Project Number: 29283
NEx Number: 130097
Total Pages: 34

DOCUMENT HISTORY

REVISION	DATE	COMMENTS
-	April 12, 2010	Prepared By: Alan Laudani
-	April 12, 2010	Initial Release: Alan Laudani
1	September 13, 2011	Revision 1 to revise Number of Hopping channels 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":

- The unit described in this report was received at Nemko USA, Inc.'s facilities on September 29, 2009.
- Testing was performed on the unit described in this report on September 29, 2009 to April 12, 2010
- Testing was reviewed and revised by further tests September 8, 2011 to September 13, 2011.
- 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), Industry Canada, 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:	Indyme Solutions, Inc. 8295 Aero Place San Diego, CA 92123
CONTACT: E-Mail:	Greg King gking@indyme.com
DATE (S) OF TEST:	September 29, 2009 to April 12, 2010
EQUIPMENT UNDER TEST (EUT): EUT SERIAL NUMBER:	Access Point 0000006B
MODEL:	CB951
CONDITION UPON RECEIPT:	Suitable for Test
TEST SPECIFICATION:	FCC, Part 15.247, Subpart C Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5850 MHz and 24.0-24.25 GHz bands and RSS 210 (Issue 8, December 2010) Annex 8 - Frequency Hopping and Digital Modulation Systems Operating in the Bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

1.2. Test Summary

Part 15	RSS-210	Test Description	Required	Result
15.207 (a)	RSS-Gen 7.2.2	Conducted Emission Limit	Y	Pass
15.247 a1i	A8.1(c)	20dB & 99% Bandwidth	Y	Pass
12.247a1	A8.1(c)	Channel Separation | Average time of occupancy	Y	Pass
15.247a1i	A8.1(c)	Number of Hopping Channels	Y	Pass
15.247 b1	A8.4(1)	Peak Output Power	Y	Pass
15.209 a 15.247c	A8.5	Radiated Emissions within Restricted Bands	Y	Pass
15.247c	A8.5	Bandedge	Y	Pass
15.109	RSS-GEN 4.10	Receiver Spurious Emissions	Y	Pass

Testing was started at 30 MHz as there are no RF signals generated below this frequency.
Refer to the test results section for further details.

2. SYSTEM CONFIGURATION

2.1. Description and Method of Exercising the EUT

The CB951 is an Access Point. Its function is to call for sales assistance in large stores when it receives a callbox signal. Should the transceiver fail to function, no adverse result will impair the health or safety of the user.

The EUT's performance during test was evaluated against the performance criterion specified by applicable test standards. Performance results are detailed in the test results section of this report

2.2. System Components and Power Cables

DEVICE	MANUFACTURER MODEL # SERIAL #	POWER CABLE
EUT - Access Point	Indyme Solutions, Inc. Model: CB951 Serial #: 0000006B	For FCC testing 12 VDC Battery For Normal Use, POE

2.3. Device Interconnection and I/O Cables

Connection	I/O Cable
EUT to Un-terminated	3m, unshielded, 24AWG, CAT 5 cable

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. Upon final submittal for certification, Indyme Solutions decided on using a subset (50) of the transmitter chip's 81 possible channels. This resulted in retesting to verify compliance to 15.247 and RSS 210.

2.5. Technical Specifications of the EUT

Manufacturer:	Indyme Solutions, Inc.
Operating Frequency:	918.0 – 923.0 MHz in the 902-928 MHz Band
Rated Power:	10.9 mW
Modulation:	FHSS
Antenna Connector:	SMA – Antenna captured by case interference.
Power Source:	120 VAC, 60 Hz

3. DESCRIPTION OF TEST SITE AND ENVIRONMENT

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 normalized site attenuation characteristics are verified for compliance every year, and registered with the Federal Communications Commission under Registration Number 90579 and Industry Canada under 2040B-1 and 2040B-2.

3.2. Test Environment

All tests were performed under the following environmental conditions:

Temperature range	17 – 22 ^{O}C
Humidity range	29 - 50%
Pressure range	87 - 105 kPa

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 as demonstrated by the example below:

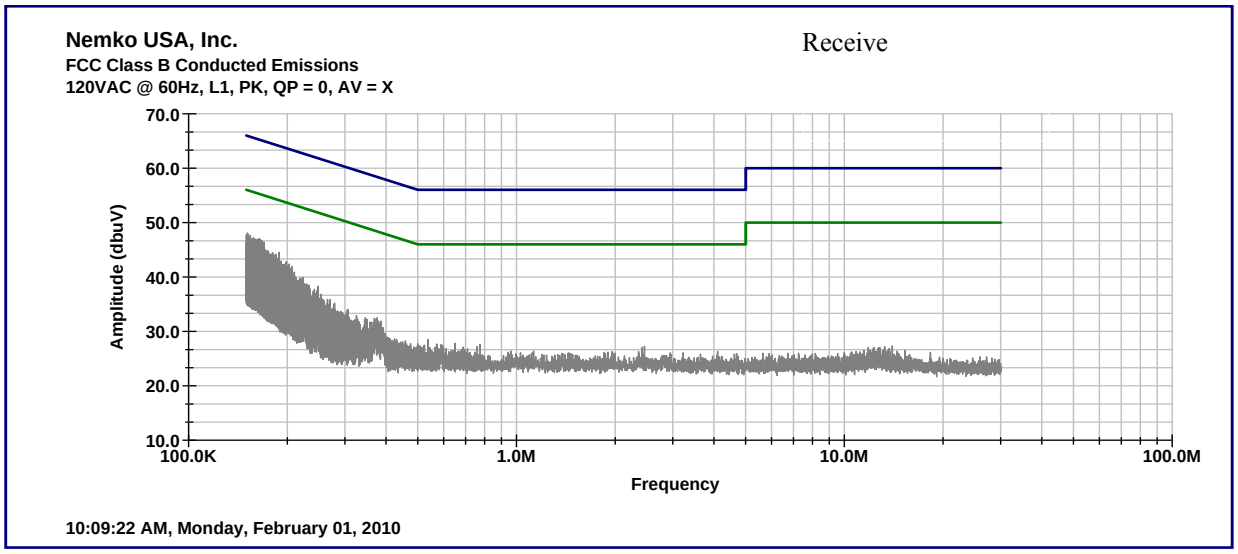
A	B	C	D	E	F	G	H	I	J	K
Meas. Freq. (MHz)	Meter Reading **Vertical**	Meter Reading **Horizontal**	Det.	EUT Side F/L/R/B	Ant. Height m	Max. Reading (dBµV)	Corrected Reading (dBµV/m)	Spec. limit (dBµV/m)	CR/SL Diff. (dB)	Pass Fail
47.2	44.5	44.6	Q	-	1.0	44.6	24.2	30.0	-5.8	Pass

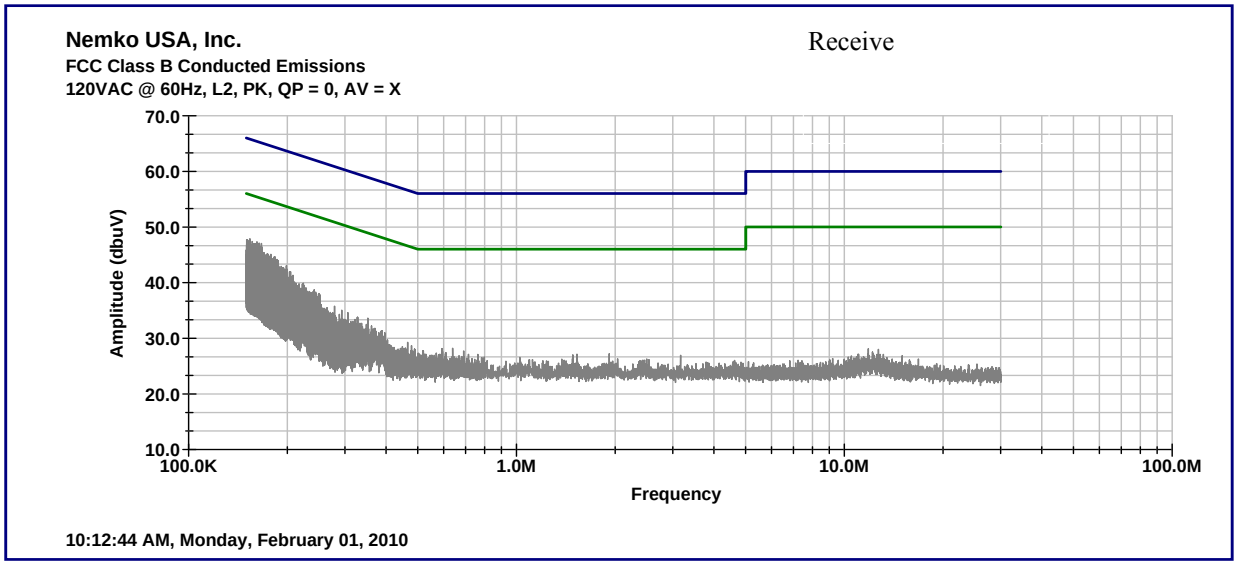
A. Frequency Measured in MHz.
B. Meter Reading: Emission Amplitude as measured with the antenna in Vertical polarity in dBµV, this is from the EMI receiver or Spectrum Analyzer.
C. Meter Reading: Emission Amplitude as measured with the antenna in Horizontal polarity in dBµV, this is from the EMI receiver or Spectrum Analyzer.
D. Detector used: Q for Quasi-Peak, A for average, P for peak.
E. EUT Side F/L/R/B: Side of EUT facing the receiving antenna. Front, Left, Right, Back. If not noted, emission did not peak in a significant manner to discriminate which side of the EUT emitted the emission.
F. Ant. Height m: Antenna height in meters of strongest emission when the antenna was raised from 1 to 4 meters, vertical or horizontal.
G. Max Reading: Max meter reading of B vertical and C horizontal in dBµV.
H. Corrected Reading: Corrected Reading in dBµV/m; Max Reading corrected for cable loss (dB), antenna factor (dBV/m) and preamplifier gain (dB).
I. Spec limit: Specification Limit at the measured frequency in dBµV/m.
J. CR/SL Diff.: Difference in dB of Corrected Reading and Specification Limit, negative result is pass margin.
K. Pass Fail: Result; EUT does or does not comply at this frequency.

5. Test Results

5.1. Conducted Emissions Test Data – Receive Mode

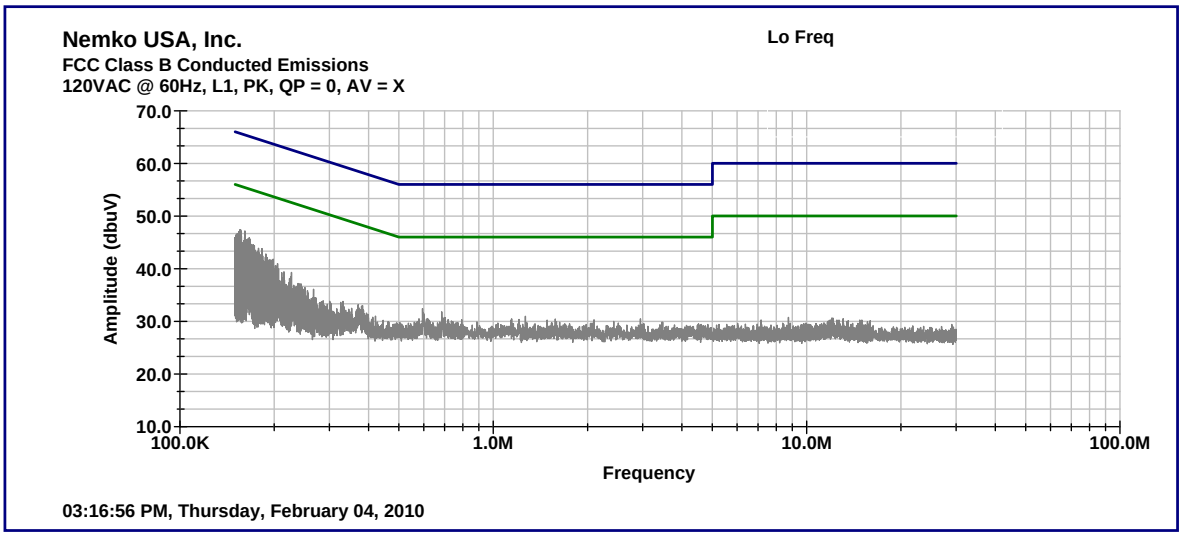
Client	Indyme Solutions, Inc.	Temperature	22	°C
PAN #	29283	Relative Humidity	35	%
EUT Name	Access Point	Barometric Pressure	102.2	Hg
EUT Model	CB951	Test Location	Enclosure 1	
Governing Doc	CFR 47, Part 15B	Test Engineer	Alan Laudani	
Basic Standard	Sec. 15.207	Date	2-1-2010	
Parameters	Peak RBW: 100kHz VBW: 100kHz Quasi-Peak: RBW 9kHz, VBW 30 kHz Average: RBW 100 kHz, VBW 1 Hz Quasi-Peak Limit Blue Line, Average Limit Green Line			

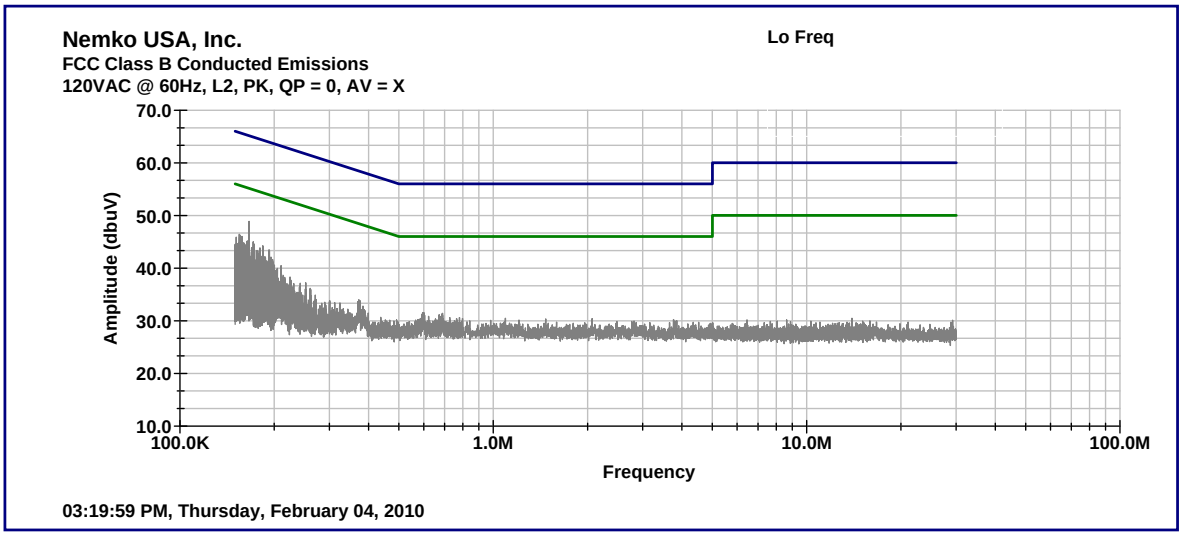




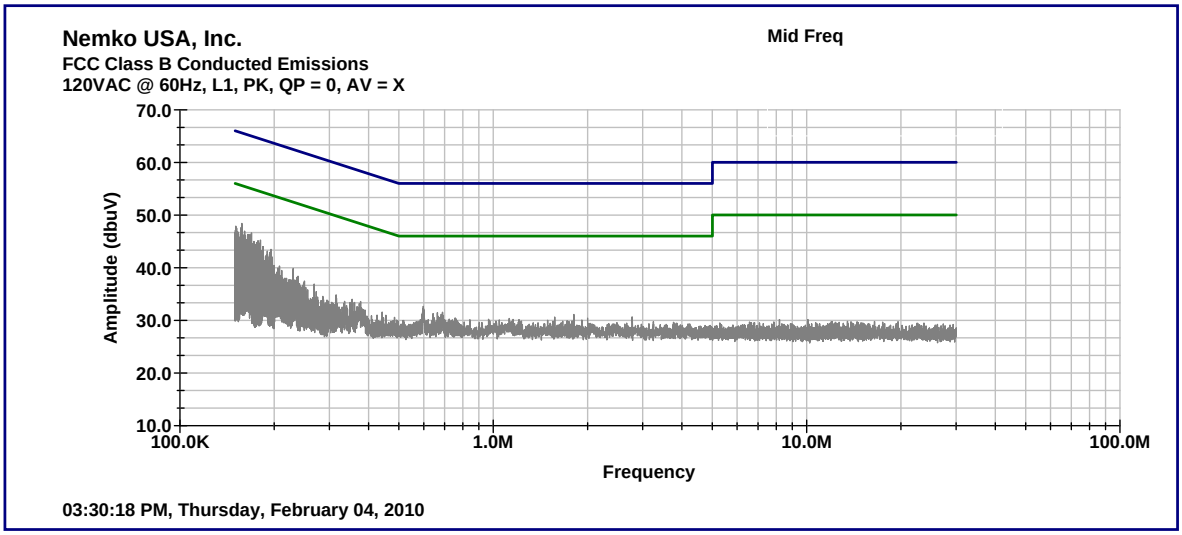
5.2. Conducted Emissions Test Data – Transmit Mode

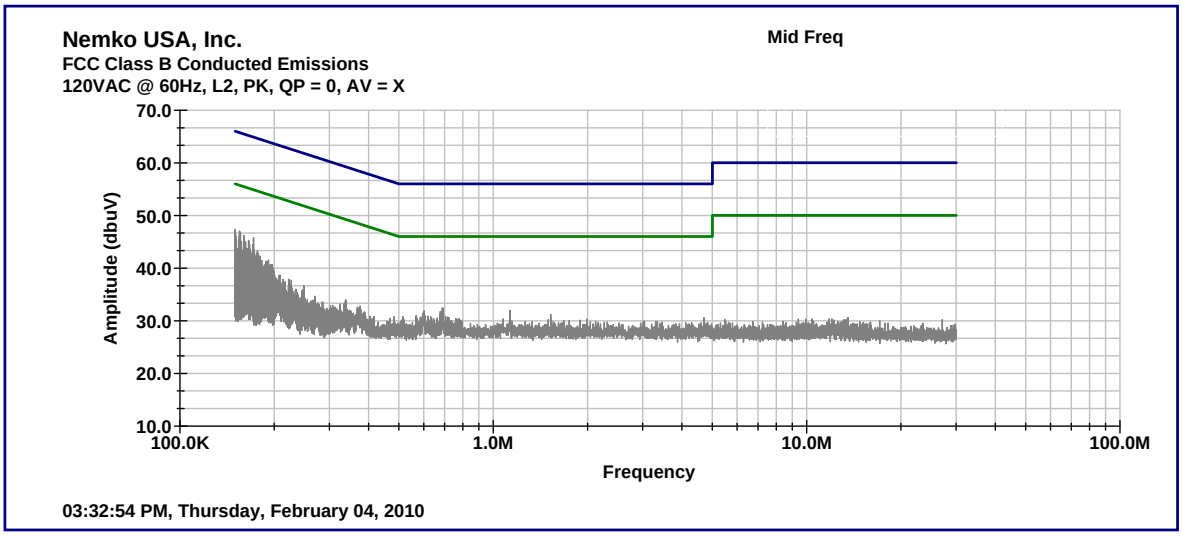
Low Channel





Mid Channel


Nemko USA, Inc.
Mid Freq
FCC Class B Conducted Emissions
120VAC @ 60Hz, L1, PK, QP = 0, AV = X
70.0
60.0
50.0
40.0
30.0
20.0
10.0
Amplitude (dbuV)
100.0K
1.0M
10.0M
100.0M
Frequency
03:30:18 PM, Thursday, February 04, 2010


Nemko USA, Inc.
Mid Freq
FCC Class B Conducted Emissions
120VAC @ 60Hz, L2, PK, QP = 0, AV = X
70.0
60.0
50.0
40.0
30.0
20.0
10.0
Amplitude (dbuV)
100.0K
1.0M
10.0M
100.0M
Frequency
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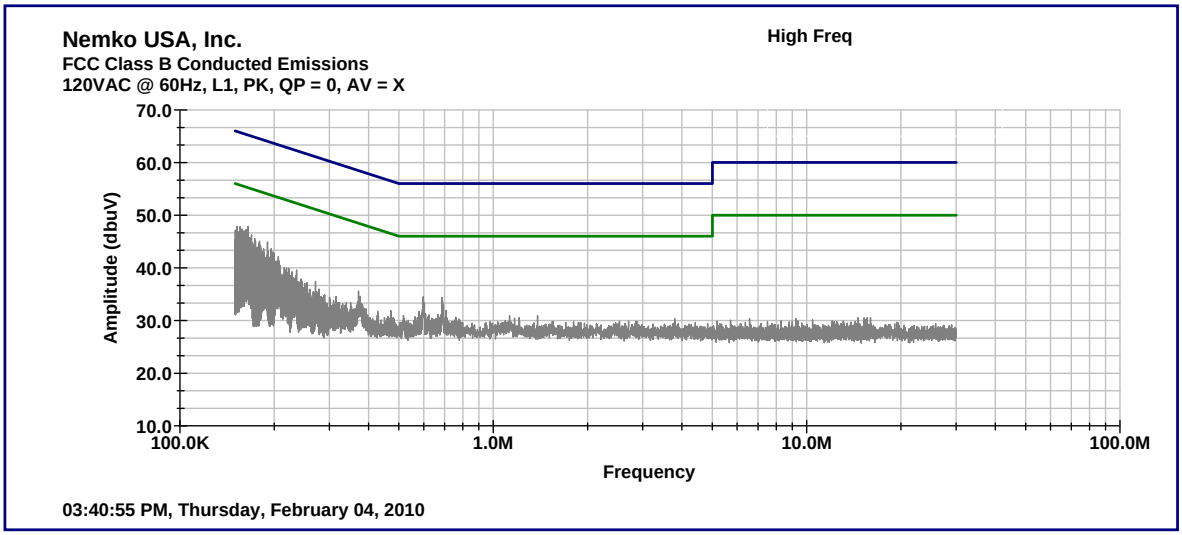
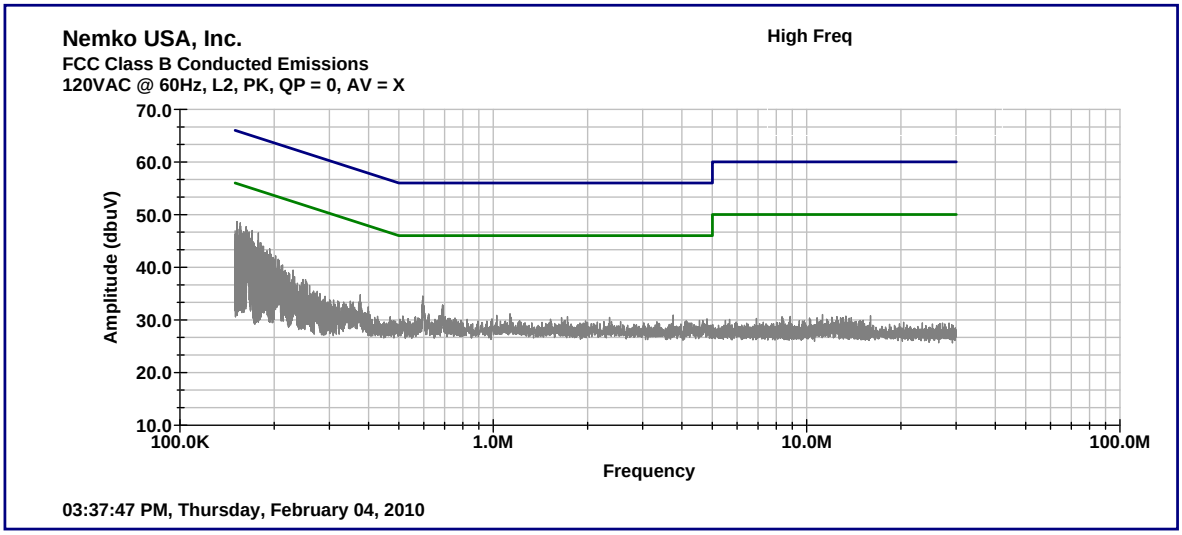
High Channel





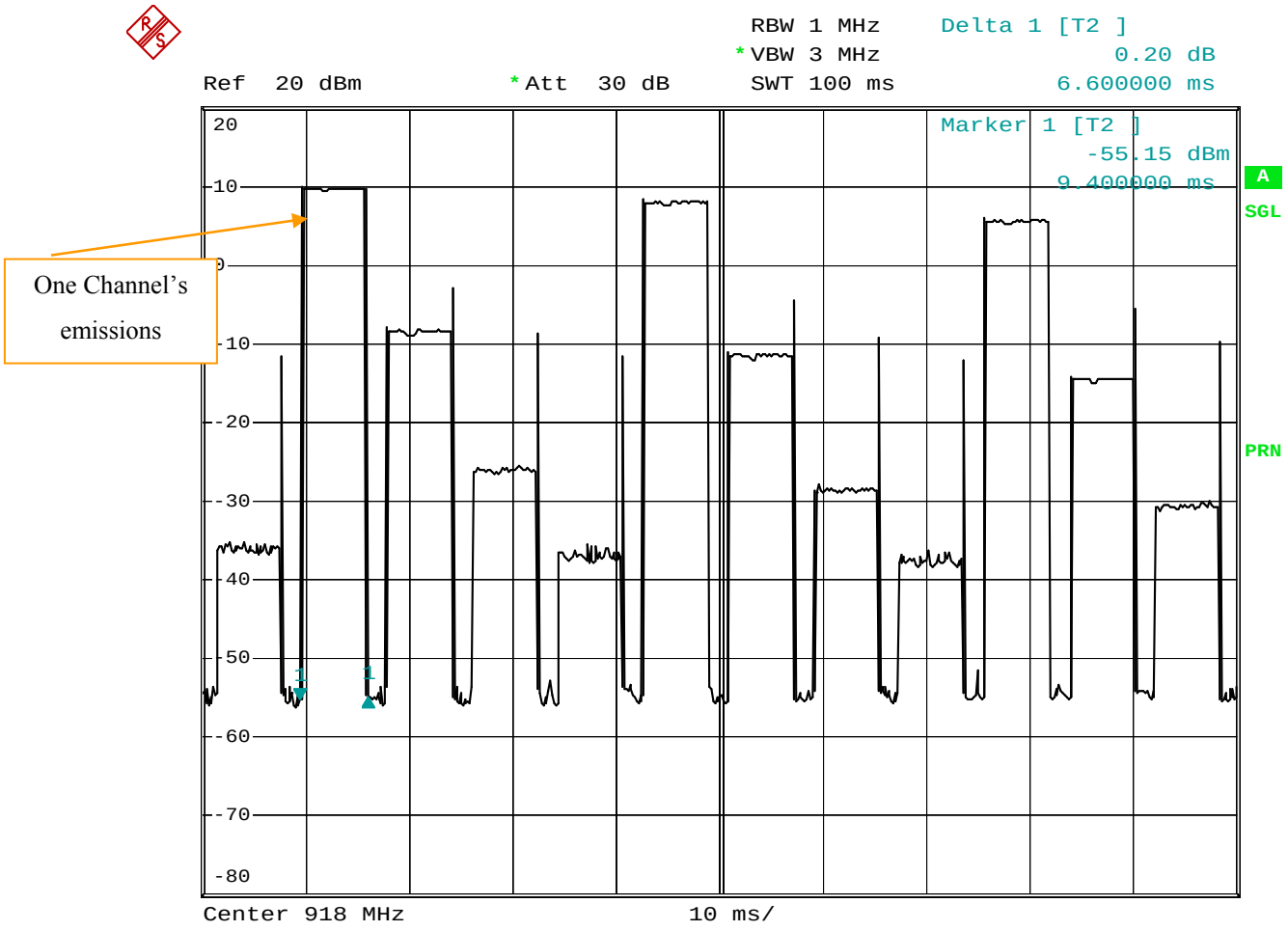
5.3. Duty Cycle Measurement

RSS-210 Annex 8.1(4)

Digital Word = 6.6 microseconds in 100 ms

DCF = 20 x log(0.0066) = -23.6 dB

FCC limits DCF to –20dB



5.3 Out of Band Emissions Test Data

A8.5 Out-of-band Emissions In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under Section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required.

15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Emissions reported below, Emissions were searched over a range of 30 MHz to 10000 MHz,

Test Results: 15.205 Restricted bands, No other emissions detected, EUT complies conducted and Radiated Emissions.

Calculation example:

Example Frequency = 918.0 MHz
75.6 dBuV (spectrum analyzer reading) +6.7 dB (cable loss @ frequency) +23.5 dB/m_(antenna factor @ frequency) – 0 dB (amplifier gain @ frequency) = 106.3 dBuV/m Corrected reading.

Emissions below caused by digital circuitry and are the same regardless of transmit frequency and receive.

No other emissions within 20 dB of the limits due to digital circuitry were found.

No other emissions found due to receive mode.

Radiated Emissions Data

Job # :	29283	Date :	4-12-2010	Page 1 of 1	
NEX #:	130097	Time :	1330		
		Staff :	AAL		
Client Name :	Indyme Solutions, Inc.			EUT Voltage :	120
EUT Name :	Access Point			EUT Frequency :	60
EUT Model # :	C951			Phase:	1
EUT Serial # :	0000006B			NOATS	
EUT Config. :	Transmit, digital emissions			SOATS	X
				Distance < 1000 MHz:	3 m
				Distance > 1000 MHz:	3 m
Specification :	CFR47 Part 15, Subpart B, Class B				
Loop Ant. #:	552				
Bicon Ant.#:	128_3m	Temp. (°C) :	15		
Log Ant.#:	111_3m	Humidity (%) :	56		
DRG Ant. #	887	Spec Analyzer #:	897		
Cable LF#:	SOATS	Analyzer Display #:	897		
Cable HF#:	SOATS	Quasi-Peak Detector #:	897		
Preamp LF#:	826	Preselector #:	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
				-							
450.0	51.3	35.8	Q	-	1.0	51.3	39.9	46.0	-6.1	Pass	
550.0	52.6	43.3	Q	-	1.0	52.6	43.3	46.0	-2.7	Pass	
600.0	44.6	39.7	Q	-	1.0	44.6	36.3	46.0	-9.7	Pass	
650.0	45.5	48.1	Q	-	1.0	48.1	41.3	46.0	-4.7	Pass	
750.0	43.8	42.5	Q	-	1.0	43.8	38.6	46.0	-7.4	Pass	
850.0	43.6	34.0	Q	-	1.0	43.6	39.9	46.0	-6.1	Pass	

Emissions shown below are based on transmitter circuitry. No other emissions within 20 dB of the limits from 30 MHz to 10 GHz were found. No other emissions found due to receive mode.

Revised data for 50 Hopping Channels.

Radiated Emissions Data

Job # :	29283	Date :	9-8-2011	Page 1 of 1	
NEX #:	130097	Time :	0800		
		Staff :	AAL		
Client Name :	Indyme Solutions Inc.			EUT Voltage :	12
EUT Name :	Access Point			EUT Frequency :	dc
EUT Model # :	C951			Phase:	
EUT Serial # :	NA				
EUT Config. :	Transmit, RF emissions				
	Modulation FSK			Distance < 1000 MHz:	3 m
				Distance > 1000 MHz:	3 m
Specification :	FCC 15C	15.247	15.205		
Loop Ant. #:	NA				
Bicon Ant.#:	114_3m	Temp. (°C) :	22		
Log Ant.#:	110_3m	Humidity (%) :	46		
DRG Ant. #	529	Spec Analyzer #:	911		
Cable LF#:	SOATS	Analyzer Display #:	911		
Cable HF#:	60ft_blue	Quasi-Peak Detector #:	911		
Preamp LF#:	NA	Preselector #:	NA		
Preamp HF#	317				

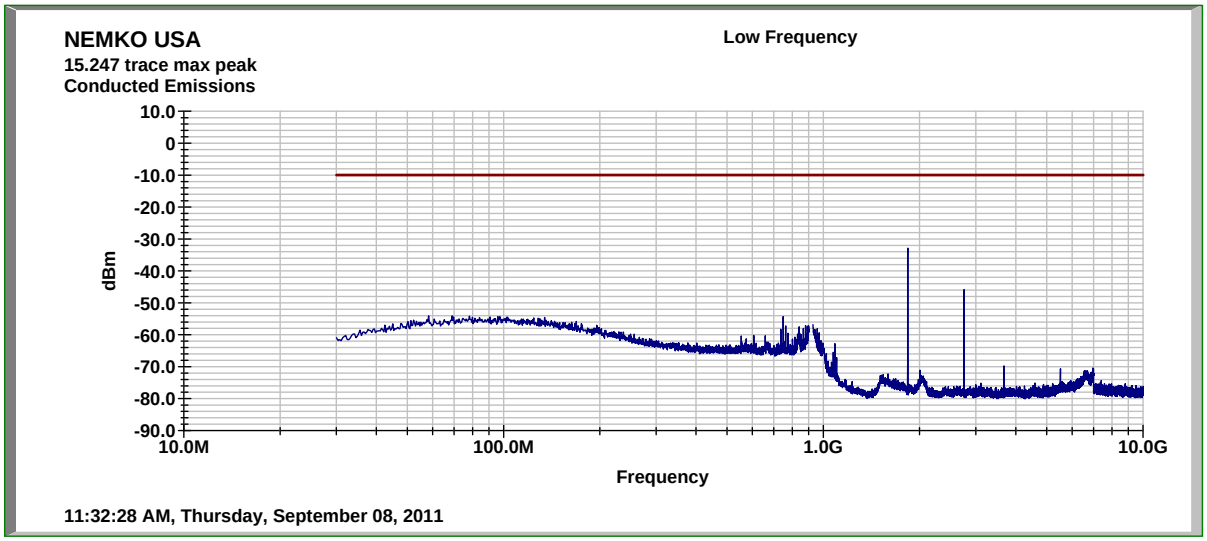
Quasi-Peak	RBW:	120 kHz
	Video Bandwidth	300 kHz
Peak	RBW:	1 MHz
	Video Bandwidth	3 MHz
Average	RBW:	1 MHz
	Video Bandwidth	10 Hz

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

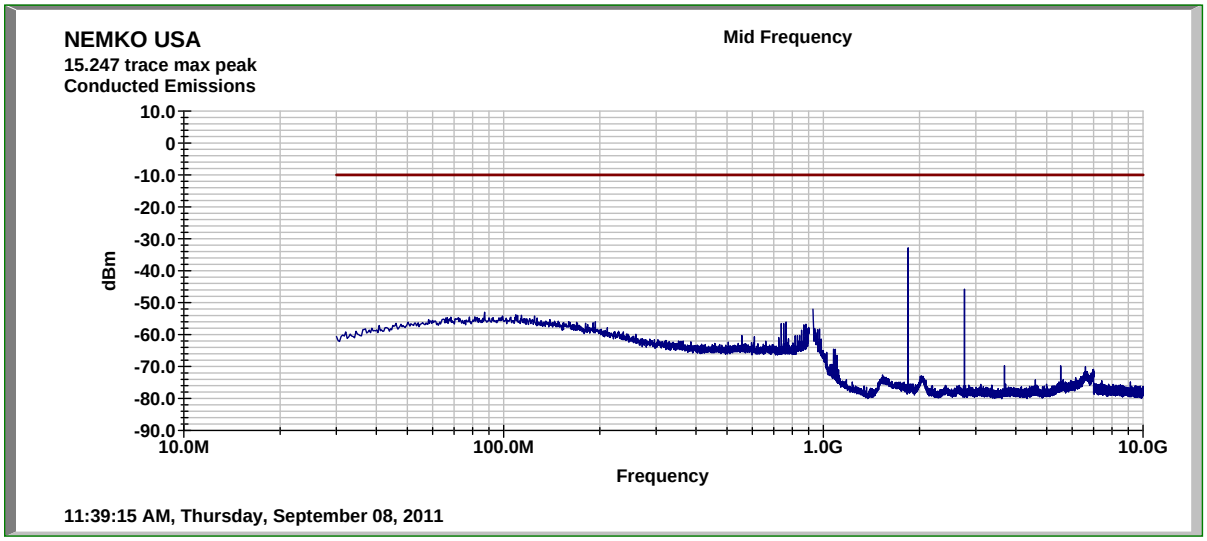
Meas. Freq. (MHz)	Meter Reading **Vertical**	Meter Reading **Horizontal**	Det.	EUT Side degrees	Ant. Height cm	Max. Reading (dBµV)	Corrected Reading (dBµV/m)	Spec. limit (dBµV/m)	CR/SL Diff. (dB)	Pass Fail	Comment
918.0	75.6	67.9	P	-	1	75.6	105.6				
923.0	75.7	67.9	P	-	1	75.7	105.7				
902.0	9.4	9.2	Q	29	112	9.4	39.4	46.0	-6.6	Pass	non-hopping
902.0	11.9	11.8	P	29	112	11.9	41.9				
928.0	14.3	14.2	Q	29	112	14.3	44.3	46.0	-1.7	Pass	
928.0	17.7	17.3	P	29	112	17.7	47.7				
902.0	9.3	9.2	Q	29	112	9.3	39.3	46.0	-6.7	Pass	hopping
902.0	15.8	14.6	P	29	112	15.8	45.8				
928.0	13.0	11.5	Q	29	112	13.0	43.0	46.0	-3.0	Pass	
928.0	24.0	23.4	P	29	112	24.0	54.0				
1836.0	52.3	49.0	P	41	105	52.3	55.2	74.0	-18.8	Pass	2nd Harmonic
1836.0	32.3	29.0	A	41	105	32.3	35.2	54.0	-18.8	Pass	918.1 MHz
1841.0	53.2	47.7	P	28	105	53.2	57.2	74.0	-16.8	Pass	2nd Harmonic
1841.0	33.2	27.7	A	28	105	33.2	37.2	54.0	-16.8	Pass	920.5 MHz
1846.0	52.5	49.2	P	34	110	52.5	56.9	74.0	-17.1	Pass	2nd Harmonic
1846.0	32.5	29.2	A	34	110	32.5	36.9	54.0	-17.1	Pass	923.0 MHz

Conducted Spurious Emissions Test Data (display line 20dBc)

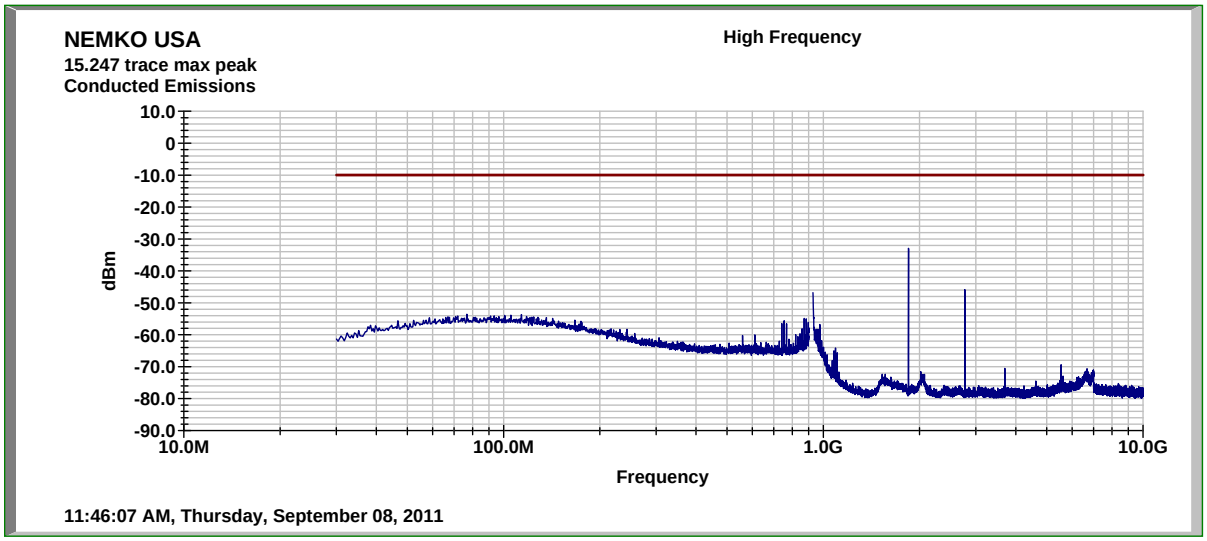
Low Frequency



Mid Frequency



High Frequency



5.4. Bandwidth

RSS-210 Annex 8.1(4)

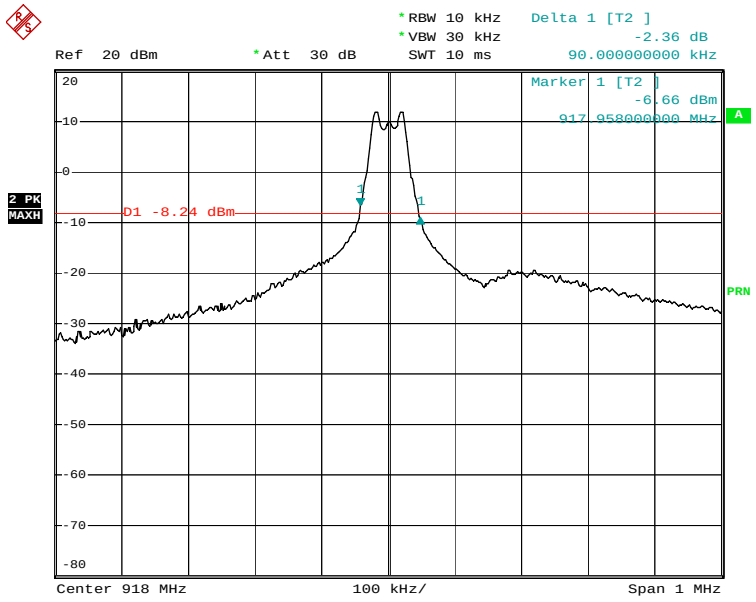
(a)(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies 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)(i) For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

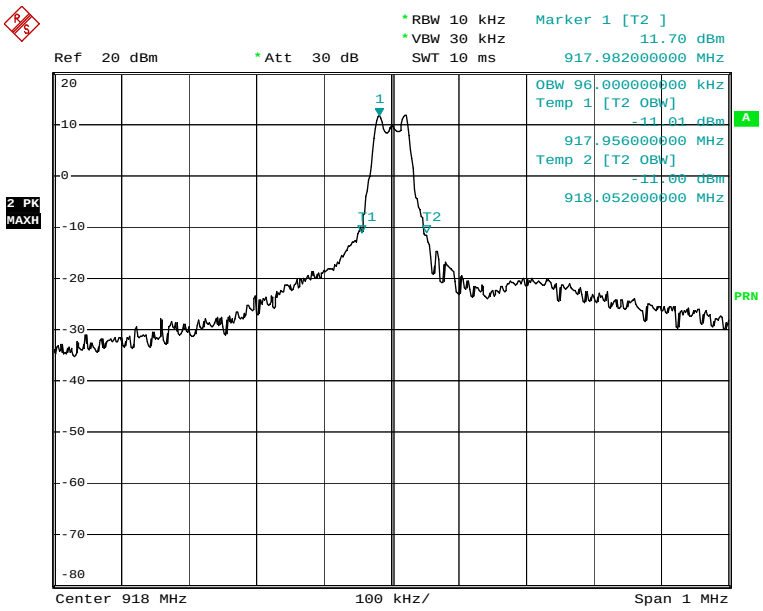
Test Results: Max hold, Conducted Peak measurement. RBW 1% of span. EUT Complies.

kHz	Low Channel	Mid Channel	High Channel
20 dB Bandwidth	90	90	94
99% Bandwidth	96	94	110

Low Channel

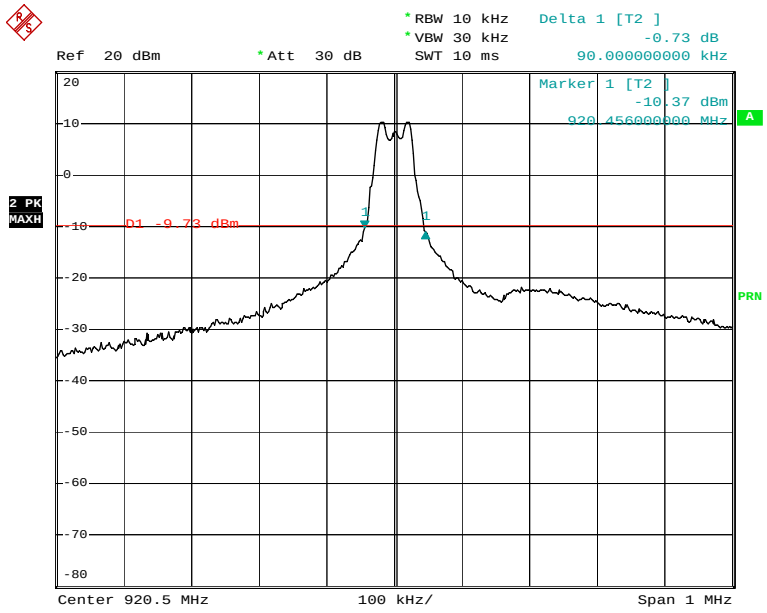


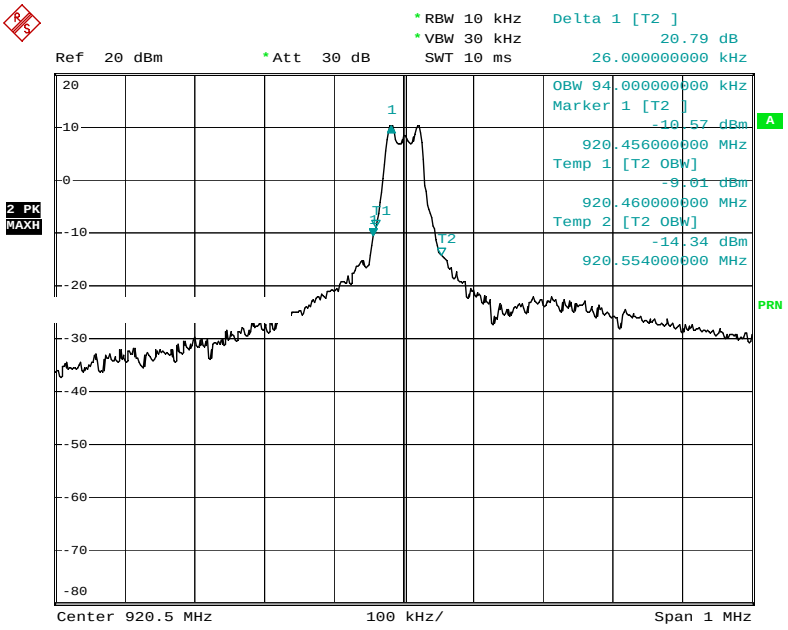
Date: 4.JAN.1997 23:26:34



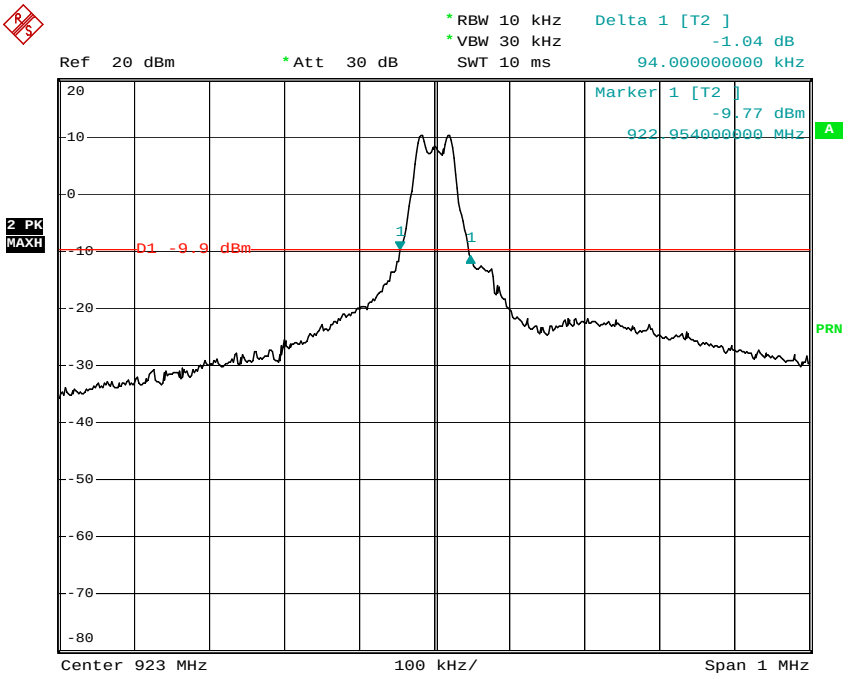
Date: 4.JAN.1997 23:27:47

Mid Channel

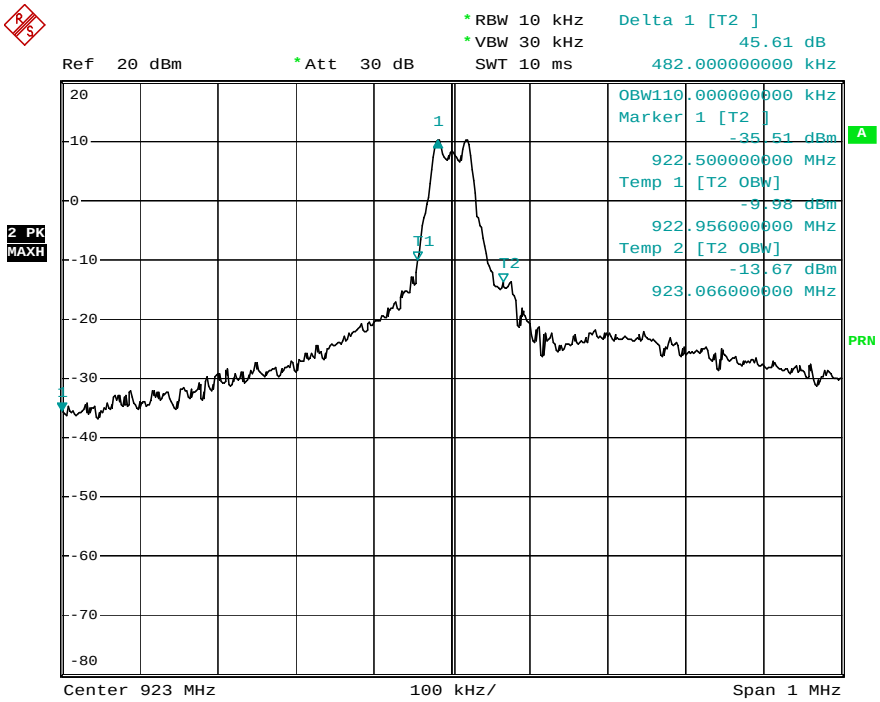

RBW 10 kHz
VBW 30 kHz
SWT 10 ms
Delta 1 [T2]
-0.73 dB
90.000000000 kHz
Ref 20 dBm
Att 30 dB
Marker 1 [T2]
-10.37 dBm
920.456000000 MHz
2 PK
MAXH
D1 -9.73 dBm
PRN
Center 920.5 MHz
100 kHz/
Span 1 MHz
Date: 4.JAN.1997 23:55:06


RBW 10 kHz
VBW 30 kHz
SWT 10 ms
Delta 1 [T2]
20.79 dB
26.000000000 kHz
Ref 20 dBm
Att 30 dB
OBW 94.000000000 kHz
Marker 1 [T2]
-10.57 dBm
920.456000000 MHz
Temp 1 [T2 OBW]
-9.01 dBm
920.460000000 MHz
Temp 2 [T2 OBW]
-14.34 dBm
920.554000000 MHz
2 PK
MAXH
PRN
Center 920.5 MHz
100 kHz/
Span 1 MHz
Date: 4.JAN.1997 23:55:48

High Channel



Date: 5.JAN.1997 00:01:11



Date: 4.JAN.1997 23:59:03

5.5. Transmitter Output Power

RSS-210 Annex 8.4 (1) For frequency hopping systems operating in the band 902-928 MHz, the maximum peak conducted output power shall not exceed 1.0 W, and the e.i.r.p. shall not exceed 4 W, if the hopset uses 50 or more hopping channels; the maximum peak conducted output power shall not exceed 0.25 W, and the e.i.r.p. shall not exceed 1 W, if the hop set uses less than 50 hopping channels.

15.247 b) The maximum peak conducted output power of the intentional radiator shall not exceed the following:

(2) For frequency hopping systems operating in the 902–928 MHz band: 1 watt for systems employing at least 50 hopping channels

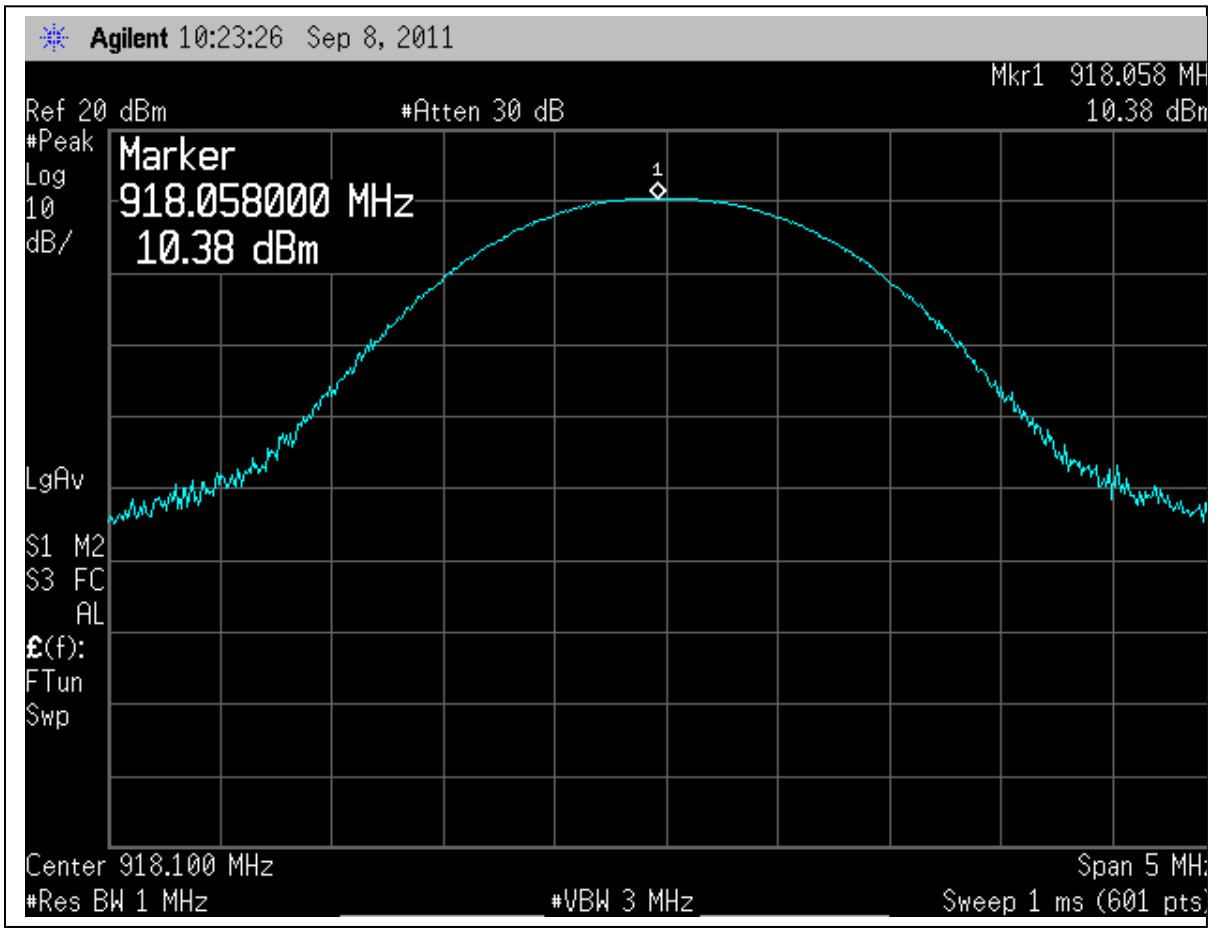
Test Results: Max hold, Conducted Peak measurement, EUT complies.

Source power was varied by +/- 15% using an autotransformer, no change in RF output power occurred.
Antenna Gain is 1.282 dBi

	Low Channel 918.0 MHz	Mid Channel 920.5 MHz	High Channel 923.0 MHz
Conducted power (dBm)	10.38	10.34	10.33
EIRP (dBm)	11.66	11.62	11.61
EIRP (mWatts)	14.6	14.5	14.5

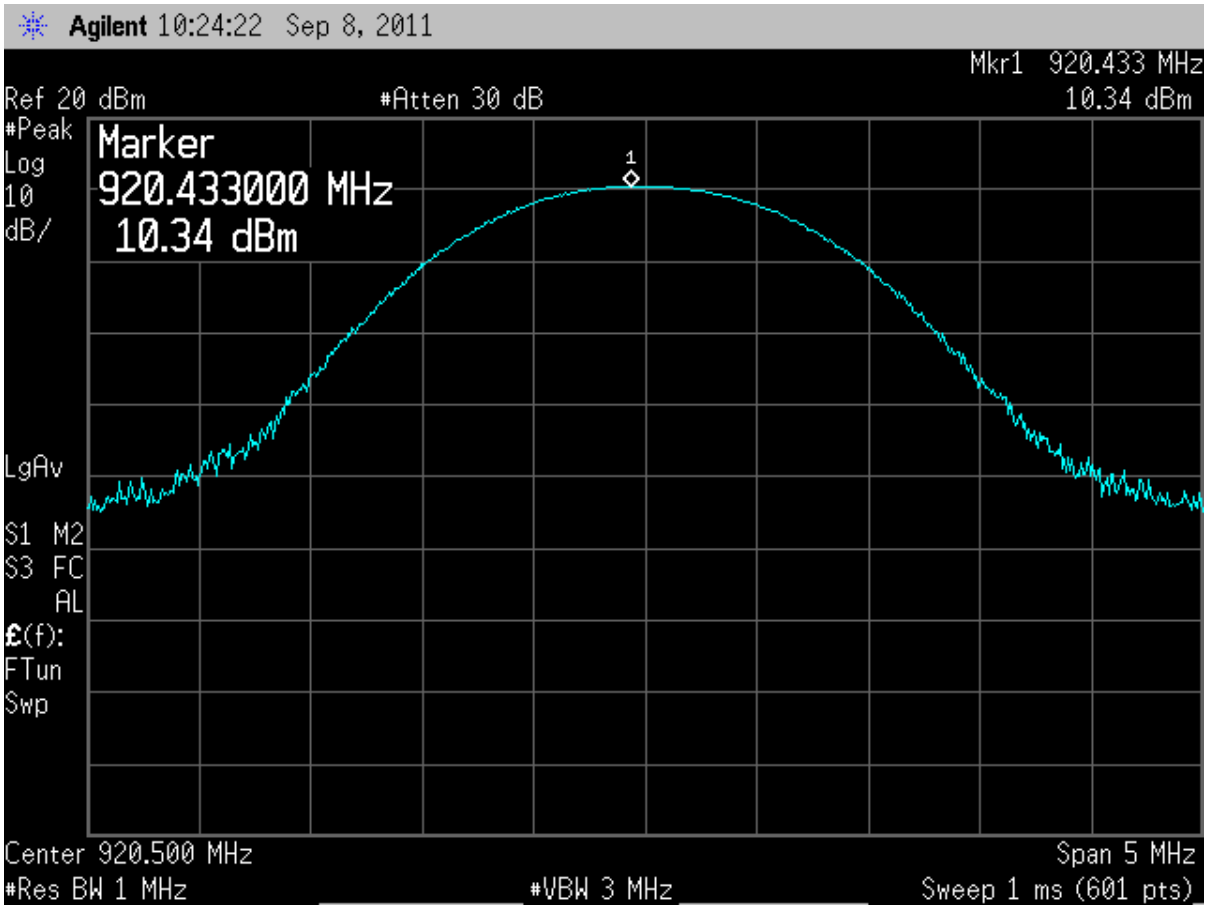
Conducted Output Power: 10.38 dBm Or 0.0109 W

Low channel.

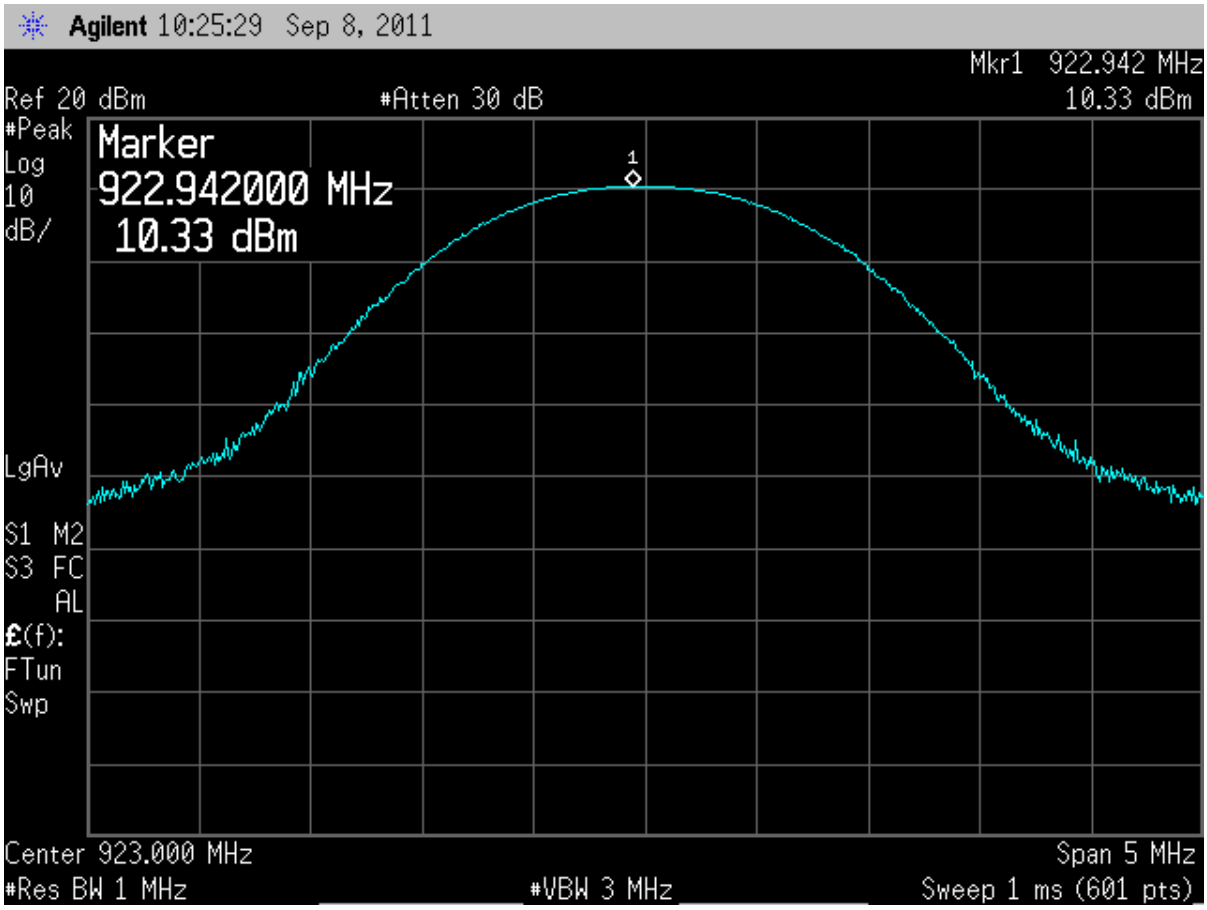


Frequency is 918.000 MHz

mid channel


Agilent 10:24:22 Sep 8, 2011
Mkr1 920.433 MHz
10.34 dBm
Ref 20 dBm
#Atten 30 dB
#Peak
Log
10
dB/
Marker
920.433000 MHz
10.34 dBm
LgAv
S1 M2
S3 FC
AL
£(f):
FTun
Swp
Center 920.500 MHz
#Res BW 1 MHz
#VBW 3 MHz
Span 5 MHz
Sweep 1 ms (601 pts)

high channel



5.6. Number of Hopping Channels

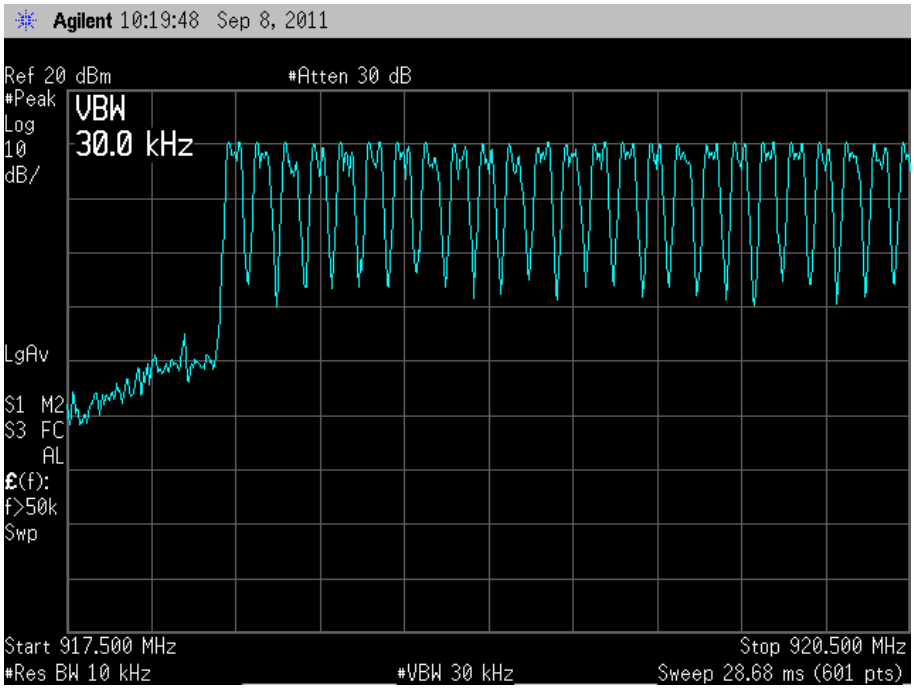
RSS-210 Annex 8.1(4)

(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.

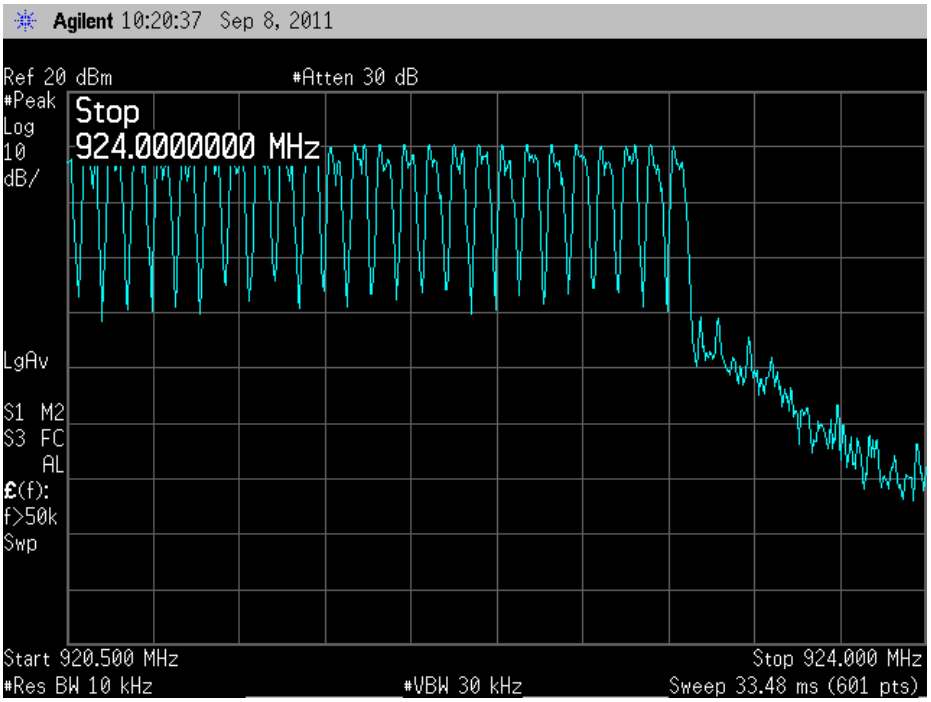
15.247(a)(1)(i) For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

Test Results: Max hold, Conducted Peak measurement, At least 50 hopping channels, EUT complies.

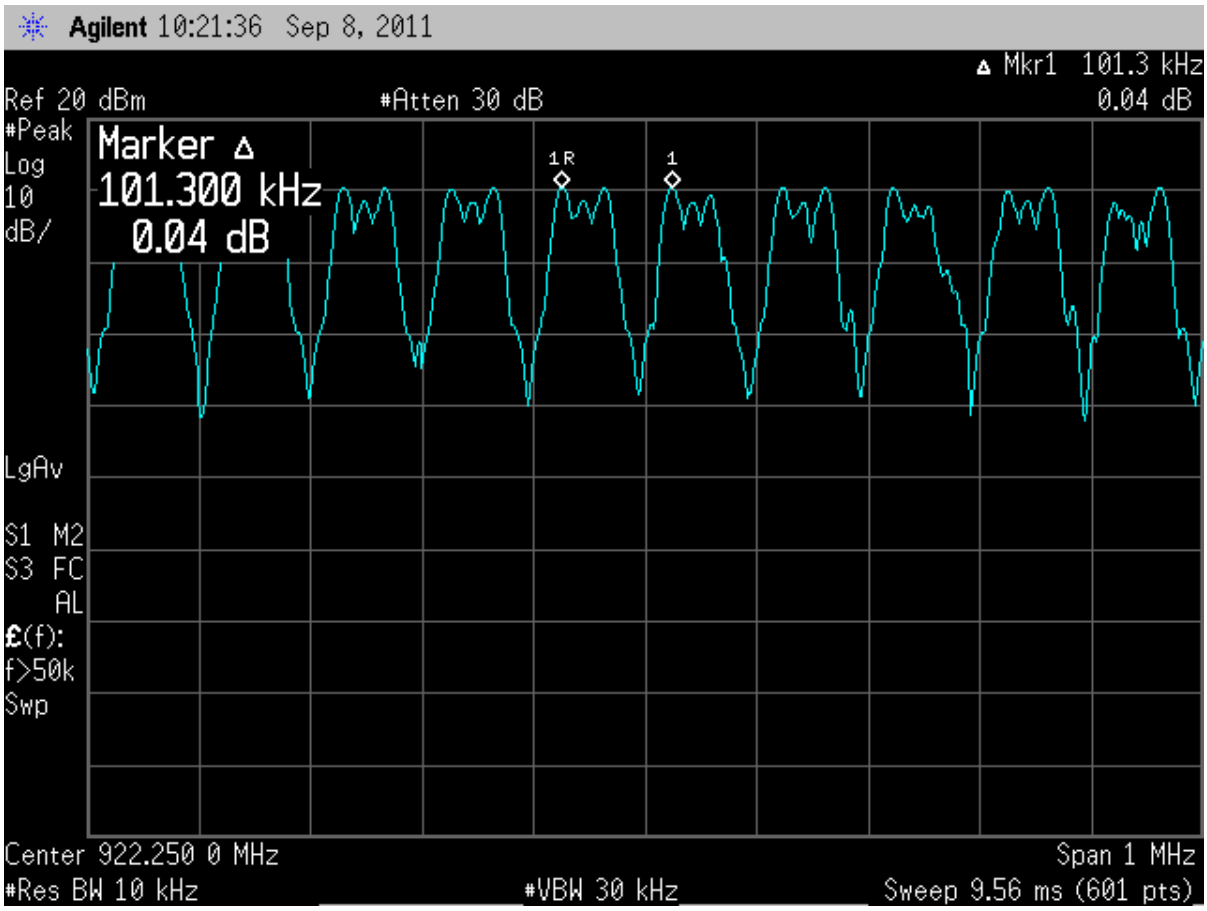
24.5 counted from 918 MHz to 920.5 MHz…



20.5 counted from 924 MHz to 928 MHz…Total 24.5+25.5 = 50



5.7. Channel Separation

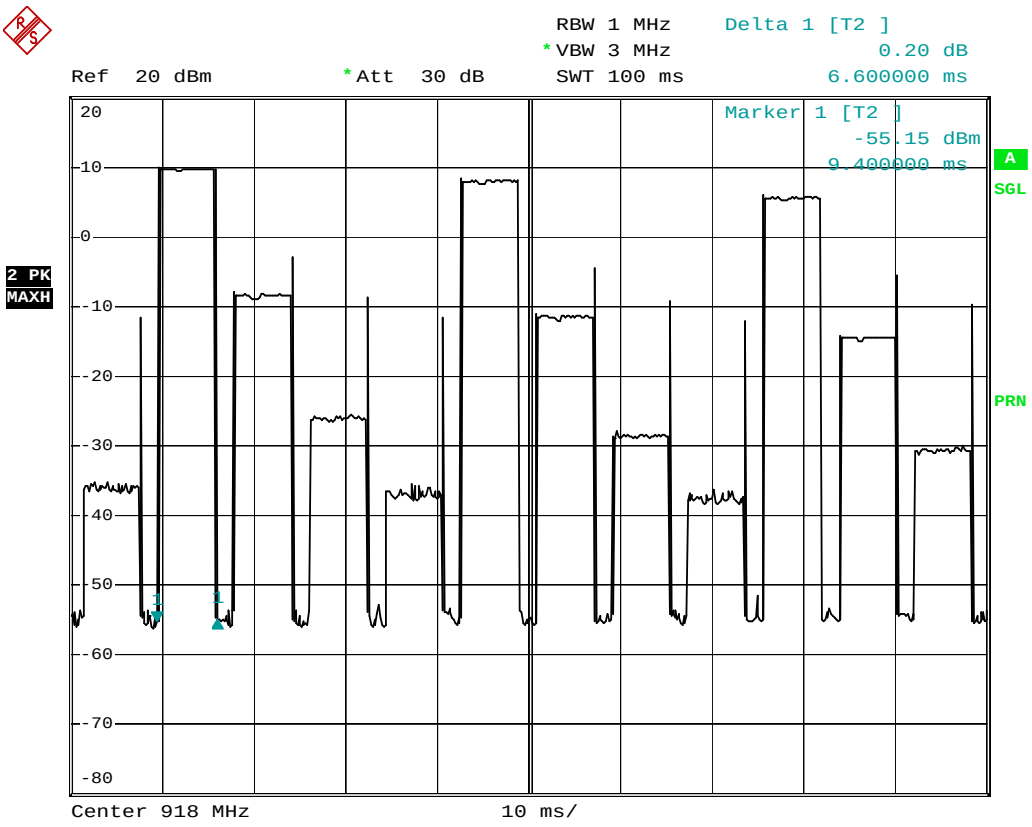


Frequency Separation: 101.3 kHz

Test Results: Max hold, Conducted Peak measurement, Frequency Separation = 20 dB bandwidth, EUT complies.

Time of Occupancy

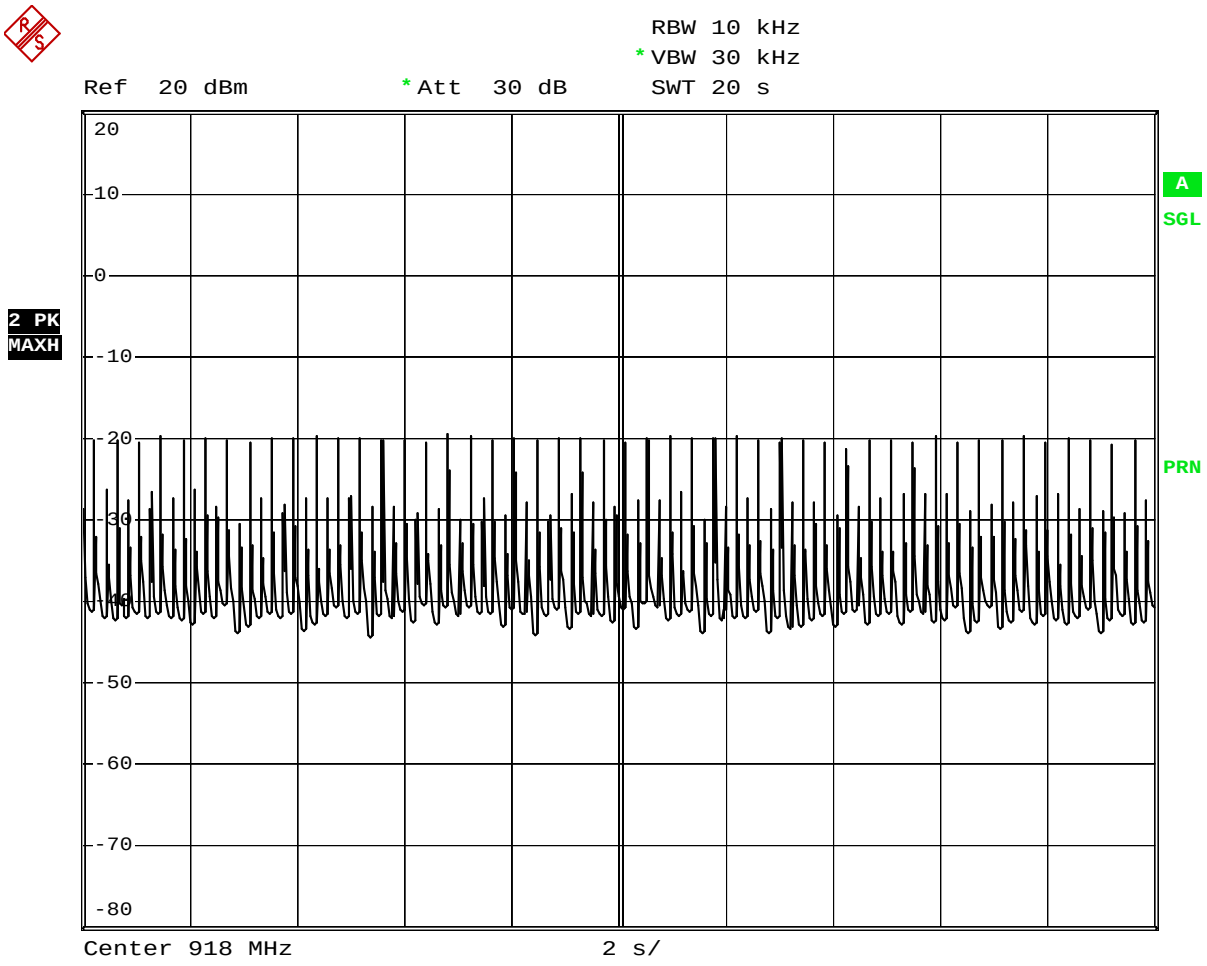
15.247 (i) For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.



6.6 ms on in 100 ms,

50 (times on in 20 seconds) x 6.5 ms = 330 ms, complies.

In the plot below, the highest channel and the next highest channel are difficult to discriminate, so if one counts both, there are 5 counts per square or 50 counts. EUT complies with Time of Occupancy.



5.8. Test Equipment

Nemko ID	Device	Manufacturer	Model	Serial Number	Cal Date	Cal Due Date
110	Antenna, LPA	Electrometrics	LPA-25	1217	1/10/2009	2/10/2011
117	Antenna	Electro-Metrics	BIA-25	2611	5/18/2009	5/18/2011
317	Preamplifier	HP	8449A	2749A00167	4/16/2009	4/16/2010
811	Multimeter	Fluke	111	78130057	12/2/2009	12/2/2010
826	Preamplifier	Com-Power	PA-103	161031	3/2/2010	3/2/2011 extended
835	Spectrum Analyzer	Rohde & Schwarz	FSEK	829058/005	3/31/2009	3/31/2010 extended
877	Antenna, DRG Horn, .7-18GHz	AH Systems	SAS-571	688	7/28/2008	7/28/2010
897	Spectrum Analyzer	Rohde & Schwarz	FSP7	837620/009	10/14/2009	10/14/2010
911	Spectrum Analyzer	Agilent	E4440A	US41421266	12/17/2009	12/17/2010
x	Regulating Transformer	TDGC	0-250 Vac	NA	NCR	NCR

Retest Equipment

Nemko ID	Device	Manufacturer	Model	Serial Number	Cal Date	Cal Due Date
110	Antenna, LPA	Electrometrics	LPA-25	1217	1/10/2009	2/10/2011
317	Preamplifier	HP	8449A	2749A00167	5/16/2011	5/16/2012
529	Antenna, DRWG	EMCO	3115	2505	10/18/2010	10/18/2012
810	Multimeter	Fluke	111	77820242	3/25/2011	3/25/2012
897	Spectrum Analyzer	Rohde & Schwarz	FSP7	837620/009	10/27/2010	10/27/2011
911	Spectrum Analyzer	Agilent	E4440A	US41421266	10/26/2010	10/26/2011
X	Regulating Transformer	TDGC	0-250 Vac	NA	NCR	NCR