Nemko USA, Inc.
2210 Faraday Ave, Suite 150
Carlsbad, CA 92008
Phone (760) 444-3500 Fax (760) 444-3005

CERTIFICATION TEST REPORT

Report Number:	2013 08241153 FCC1
Project Number:	Q10247985
Nex Number:	241153
Applicant:	EXIGENT SENSORS LLC 11331 MARKON DR Garden Grove CA 92841
Equipment Under Test (EUT): Model:	SMOKE ALARM EX20 CO, EX20C CO
FCC ID: Model:	YST-NX15 EX20 CO
IC: Model:	9299A-NX15 EX20C CO
In Accordance With:	FCC Part 15 Subpart C, 15.247 IC RSS-210 Issue 8 December 2010 IC RSS-Gen Issue 3 December 2010
Tested By:	Nemko USA Inc. 2210 Faraday Avenue, Suite 150 Carlsbad, CA 92008
Authorized By:	ALAN LAUDANI, EMC/RF Test Engineer
Date:	AUG. 2, 2013
Total Number of Pages:	30

Applicant Affirmation

Chad Christensen, representing Exigent Sensors LLC, hereby affirms:

a) That he/she has reviewed and concurs that the test shown in this report are reflective of the operational characteristics of the device for which certification is sought;

b) That the device in this test report will be representative of production units;

c) That all changes (in hardware and software/firmware) to the subject device will be reviewed.

d) That any changes impacting the attributes, functionality or operational characteristics documented in this report will be communicated to the body responsible for approving (certifying) the subject equipment.

Signature of official, July 29, 2013

Chad Christensen
Exigent Sensors LLC
11331 Markon Dr
Garden Grove CA 92841

(949) 439-1321
cchristensen@exigentsensors.com

NOTE—This affirmation must be signed by the responsible party before it is submitted to a regulatory body for approval.

Section1: Summary of Test Results

1.1 General

All measurements are traceable to national standards

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15; Subpart C and IC RSS-210. Radiated tests were conducted is accordance with ANSI C63.4-2003. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC and IC.

The assessment summary is as follows:

Apparatus Assessed:	Smoke Alarm
Model:	EX20 CO, EX20C CO
Specification:	FCC Part 15 Subpart C, 15.247 IC RSS-210 Issue 8 December 2010
Date Received in Laboratory:	July 23, 2013
Compliance Status:	Complies
Exclusions:	None
Non-compliances:	None

1.2 Report Release History

Revision	Date	Comments	
-	Aug. 2, 2013	Prepared By:	Alan Laudani
-	Aug. 2, 2013	Initial Release:	Alan Laudani

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025.

Nemko USA Inc. authorizes the applicant to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Nemko USA Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

TABLE OF CONTENTS

Section 2: Equipment Under Test

2.1 Product Identification

The Equipment Under Test was identified as follows: EX20 CO

All models use the same oscillator, microcontroller, radio, antenna, and basic layout. Each of the Canadian models have identical hardware and software to the USA models, but have different labels. The battery-only models of the smoke alarms are simply de-populated versions of the AC with battery backup models. The carbon monoxide/heat alarms are nearly identical to the smoke/heat alarms, except that the smoke sensor is replaced with a carbon monoxide sensor. The heat alarm is a de-populated version of the smoke/heat alarm, not having AC power regulating components.

2.2 Theory of Operation

The EX20 CO, EX20C CO ARE Smoke Alarms.
Its function is to alarm when the sensor reads Carbon Monoxide, CO, and or smoke, and RF transmitting allows it to send the alarm to other units. It was tested standing alone. No special test support equipment was necessary. The product was modified for continuous transmitting by test software. Its normal state is stand-by and wakes every 4 seconds to receive. When triggered by a signal from another unit, it alarms. When not transmitting, it remains in Stand-by with minimum clock activity
Since the difference between the highest and lowest channels is less than 10 MHz, the lowest and highest channels were tested for all modes and required tests. Only 2 channel frequencies: 905.2, 913.2 MHz, software directs communication to use each channel in turn.

The nominal RF output is 10 dBm.
The lowest clock frequency is 100kHz, Radiated Spurious Emissions begin at this frequency.
The modulation type is GFSK. It does not have an antenna port and uses a circuit trace as an antenna of 0 dBi gain.
The EUT is powered by one non-replaceable 3V Lithium-Manganese battery.

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

2.3 Technical Specifications of the EUT

Manufacturer:	Exigent Sensors LLC
Operating Frequency:	905.2 MHz and 913.2 MHz in the 902 to 928 MHz Band
Number of Operating Frequencies:	2
Rated Power:	7 mW
Modulation:	FSK DTS/FHSS Hybrid
Reference Designator:	552KF1D
Antenna Connector:	None, internal circuit board trace
Power Source:	3 VDC Lithium Manganese

Section 3: Test Conditions

3.1 Specifications

The apparatus was assessed against the following specifications:

FCC Part 15 Subpart C, 15.247
Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5850 MHz and 24.0-24.25 GHz bands.

IC RSS-210 Issue 8 December 2010
Low-power Licence-exempt Radio-communication Devices (All Frequency Bands): Category I Equipment. Annex 8 - Frequency Hopping and Digital Modulation Systems Operating in the Bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

IC RSS-Gen Issue 3 December 2010
General Requirements and Information for the Certification of Radio-communication Equipment

3.3 Test Environment

All tests were performed under the following environmental conditions:

Temperature range	16-22ºC
Humidity range	39-45%
Pressure range	102.0 – 102.3 kPa
Power supply range	48VDC nominal

3.4 Test Equipment

4

Asset Tag	Description	Manufacturer	Model	Serial #	Last Cal	Next Cal
111	Antenna, LPA	EMCO	3146	1382	09-Jan-2013	09-Jan-2014
529	Antenna, DRWG	EMCO	3115	2505	31-Oct-2012	31-Oct-2014
552	Antenna, Loop	EMCO	ALR-30M	820	14-Jan-2013	14-Jan-2014
901	Preamplifier	Sonoma	310 N	130607	15-Oct-2012	15-Oct-2013
911	Spectrum Analyzer	Agilent	E4440A	US41421266	15-Oct-2012	15-Oct-2013
E1046	Biconical Antenna	A.H. Systems Inc.	SAS-540	736	22-Apr-2013	22-Apr-2014
836	Signal Generator	Agilent	E8254A	US41140229	7-Mar-2013	7-Mar-2014
NA	10 dB Attenuator	Weinschell	24-10-24	NA	Verified	Verifed

Registration of the 3m/10m Semi-anechoic chamber is on file with the Federal Communications Commission and with Industry Canada under Site Number 2040B-3.

Section 4: Observations

4.1 Modifications Performed During Assessment

No modifications were performed during assessment.

4.2 Record Of Technical Judgements

The technical judgement to use the EX-20AC SMK sample and data as found in Test Report 2013 08241153 X as the same circuitry, omitting the AC circuits are evident in the EX20 CO, EX20C CO.

4.3 EUT Parameters Affecting Compliance

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

4.4 Deviations From Laboratory Test Procedures

No deviations from Laboratory Test Procedure

4.5 Test Deleted

No Tests were deleted from this assessment.

4.6 Additional Observations

There were no additional observations made during this assessment.

Section 5: Results Summary

This section contains the following:

FCC Part 15 Subpart C:
IC RSS-210 Issue 7 June 2007 Annex 8
IC RSS-Gen Issue 2 June 2007

The column headed “Required” indicates whether the associated clauses were invoked for the apparatus under test. The following abbreviations are used:

N No: not applicable / not relevant
Y Yes: Mandatory i.e. the apparatus shall conform to these tests.
N/T Not Tested, mandatory but not assessed. (See section 4.4 Test deleted)

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

5.1 Test Results

Part 15C	RSS-210	Test Description	Required	Result
15.207 (a)	RSS-Gen 7.2.4	Conducted Emission Limit	NA	Battery Powered
15.215(c)	RSS-Gen 4.6.1	20 dB & 99% Bandwidth	Y	Pass
15.247(a)(2)	RSS-210 A8.2 (a)	Minimum 6dB RF Bandwidth	Y	Pass
15.247(b)(3)	RSS-210 A8.4 (4)	Peak Output Power	Y	Pass
15.247(d)	RSS-210 A8.5	Band-edge Compliance of RF Conducted Emissions	Y	Pass
15.247 (d)	RSS-210 A8.5	Spurious RF Conducted Emissions	Y	Pass
15.247 (d)	RSS-210 A8.5	Spurious Radiated Emissions	Y	Pass
15.247(e)	RSS-210 A8.2 (b)	Power Spectral Density for Digitally Modulated Devices	Y	Pass
	RSS-Gen 4.10	Receiver Spurious Emissions	Y	Pass

Appendix A: Test Results

Power Line Conducted Emissions Conducted Emissions

Client	Exigent Sensors	Temperature	23	°C
Nex #	241153	Relative Humidity	57	%
EUT Name	Smoke Alarm	Barometric Pressure	100.6	kPa
EUT Model	EX20 CO	Test Location	Enclosure 1	
Governing Doc	CFR 47, Part 15C	Test Engineer	ALAN LAUDANI	
Basic Standard	Sec. 15.207 Transmit with Alarm RSS-Gen 7.2.4	Date of test	7-23-2013	
Test Parameters	Peak RBW: 100kHz VBW: 100kHz Quasi-Peak CIRCLE: RBW 9kHz, VBW 30 kHz Average X: RBW 9kHz, VBW 30 kHz Quasi-Peak Limit Blue Line, Average Limit Green Line			

Not applicable

20 dB / 99% Bandwidth

(c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

Test Conditions:

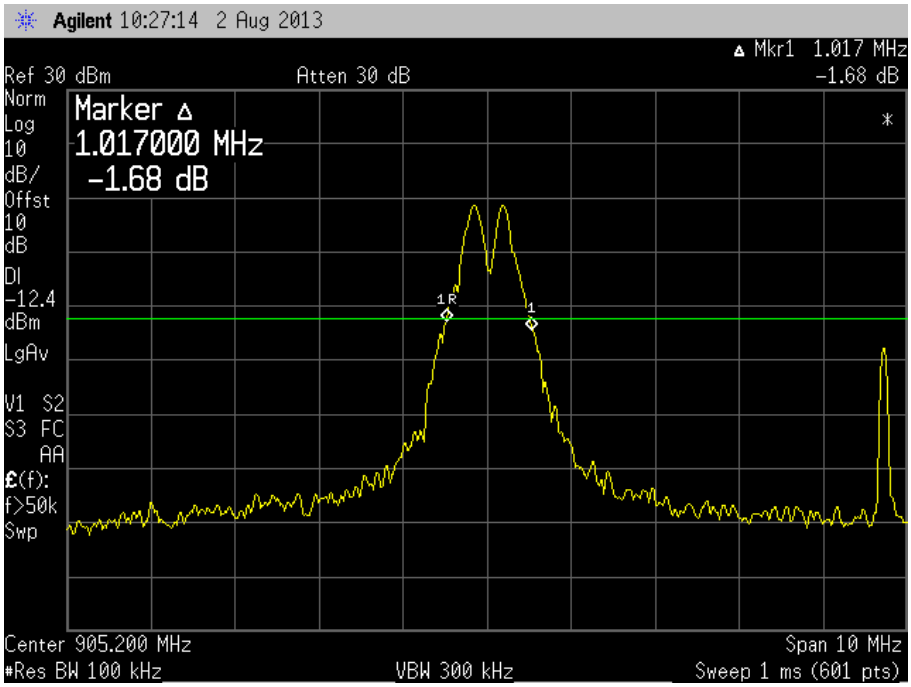
Sample Number:	EX20 CO	Temperature:	21°C
Date:	Aug. 2, 2013	Humidity:	39%
Modification State:	Low and High Channel	Tester:	Alan Laudani
		Laboratory:	Nemko

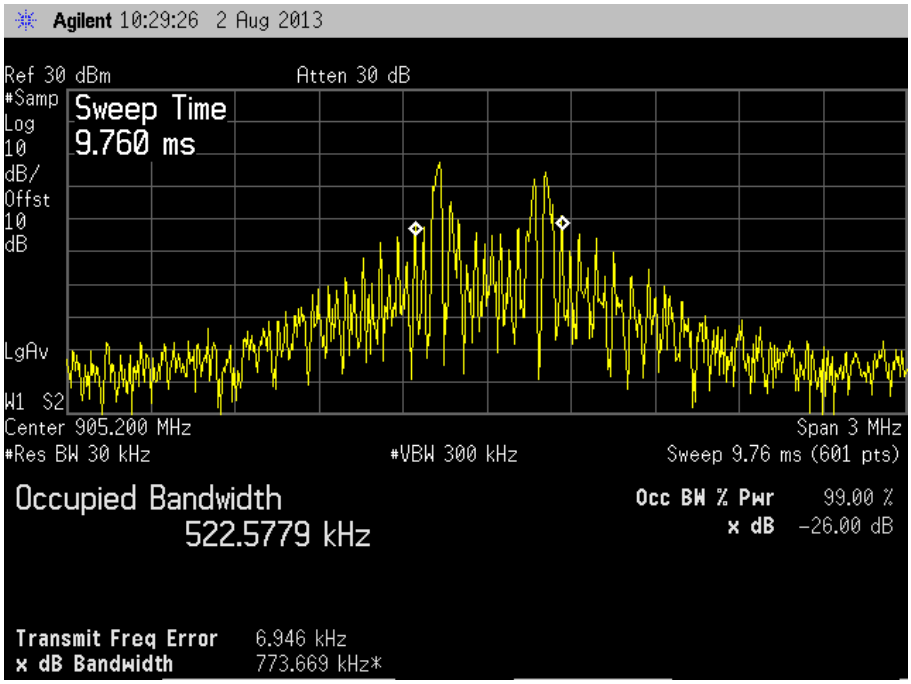
Test Results: See attached plots.

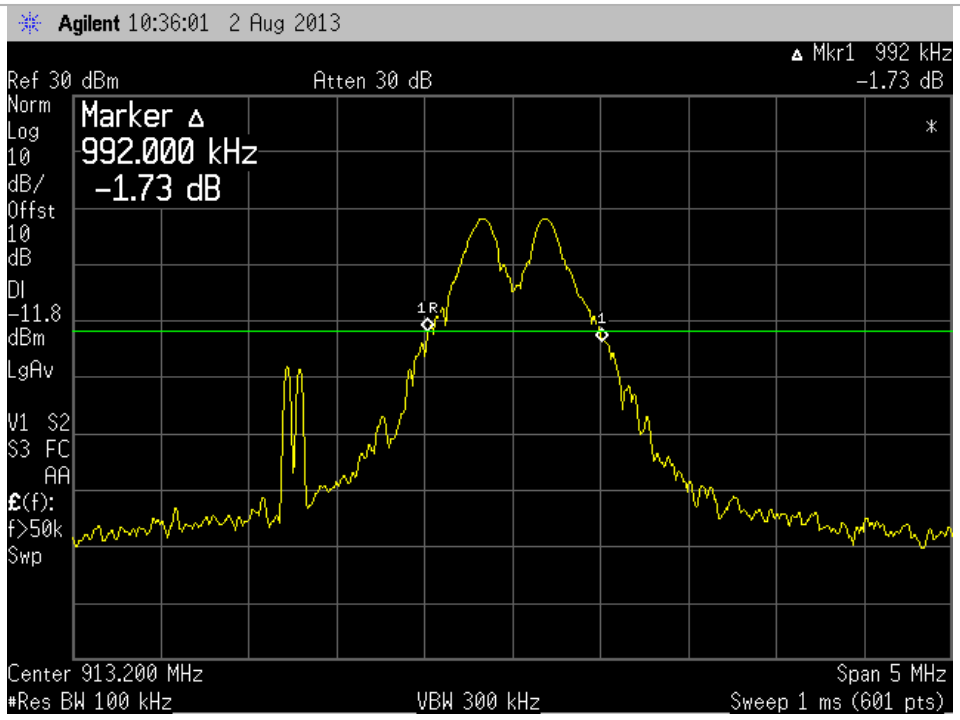
Additional Observations:

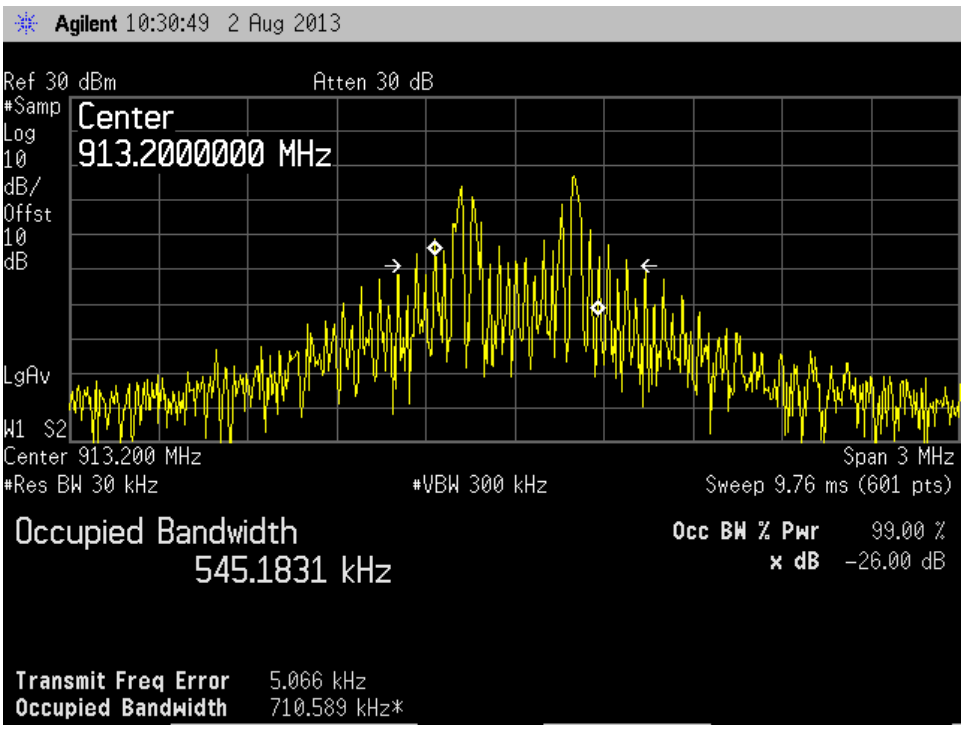
- This was a conducted test.
- Span is wide enough to capture the channel transmission
- RBW is 1% of the span
- VBW is 3X RBW
- Sweep is auto
- Detector is Peak
- Trace is Max Hold
- 99% bandwidth: Used Spectrum Analyzer's programmed function.
- 20 dB bandwidth: A peak output max hold reading was taken, a display line was drawn 20 dB lower than peak level. The 20 dB bandwidth was determined from where the channel output spectrum intersected the display line.
- Observed maximum 20 dB BW is 1017 kHz (low channel).
- Observed maximum 20 dB BW is 992 kHz (high channel).
- 905.2 MHz – (1.017/2) MHz = 904.6915 MHz (within the frequency band)
- 913.2 MHz + (0.992/2) MHz = 913.696 MHz (within the frequency band)

Frequency	20 dB BW	99% BW
905.2 MHz	1017 kHz	552 kHz
913.2 MHz	992 kHz	545 kHz


Agilent 10:27:14 2 Aug 2013
Mkr1 1.017 MHz
-1.68 dB
Ref 30 dBm
Atten 30 dB
Norm
Log
10
dB/
Offst
10
dB
Dl
-12.4
dBm
LgAv
V1 S2
S3 FC
AA
£(f):
f>50k
Swp
Marker Δ
1.017000 MHz
-1.68 dB
Center 905.200 MHz
#Res BW 100 kHz
VBW 300 kHz
Span 10 MHz
Sweep 1 ms (601 pts)


Agilent 10:29:26 2 Aug 2013
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
LgAv
W1 S2
Sweep Time
9.760 ms
Center 905.200 MHz
#Res BW 30 kHz
#VBW 300 kHz
Span 3 MHz
Sweep 9.76 ms (601 pts)
Occupied Bandwidth
522.5779 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error 6.946 kHz
x dB Bandwidth 773.669 kHz*





Minimum 6dB RF Bandwidth

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test Conditions:

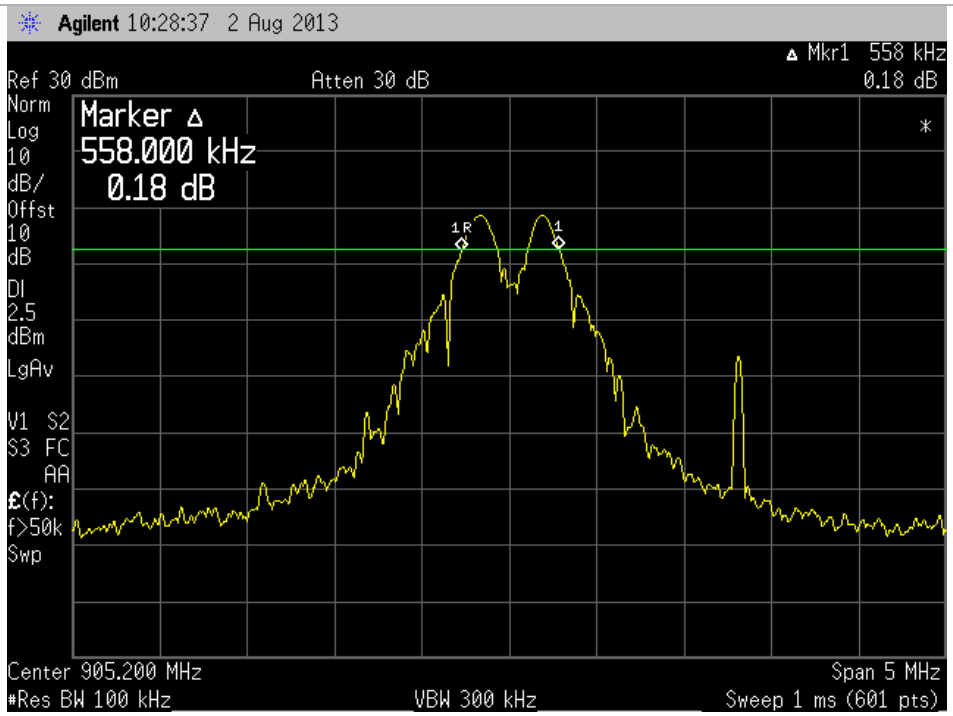
Sample Number:	EX20 CO	Temperature:	21°C
Date:	Aug. 2, 2013	Humidity:	39%
Modification State:	Low, Mid and High Channel	Tester:	Alan Laudani
		Laboratory:	Nemko

Test Results: EUT complies, See attached plots.

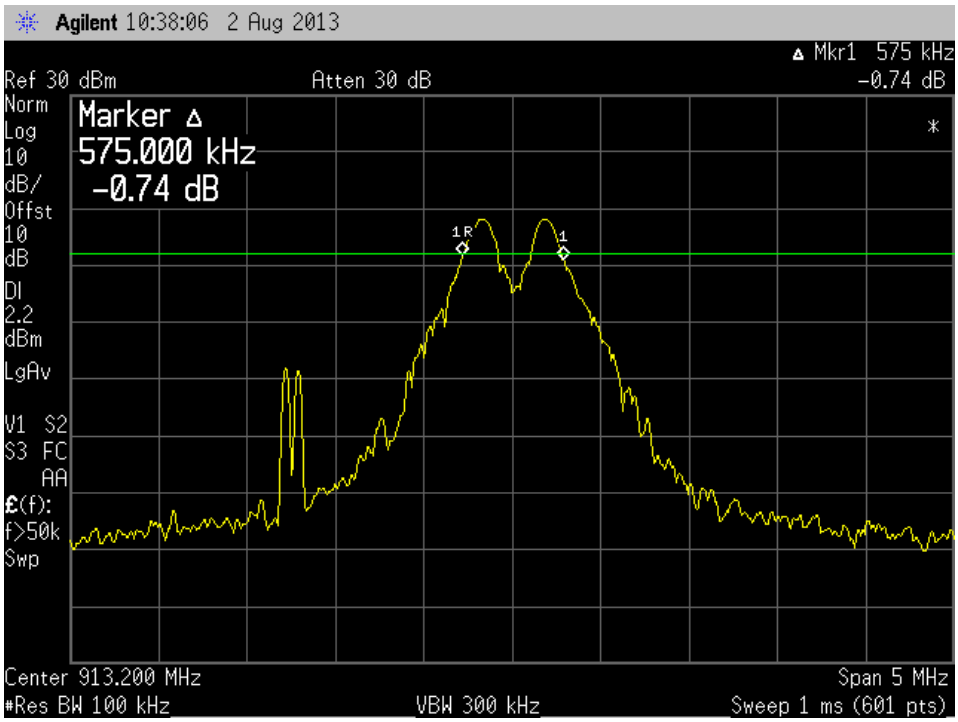
Additional Observations:

- This is a conducted test
- RBW is set to 100kHz
- VBW is 3X RBW
- Sweep is auto
- Detector is Peak
- Trace is Max Hold
- For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was plotted; a DISPLAY line was drawn 6 dB lower than PEAK level. The 6 dB bandwidth was determined from where the channel output spectrum intersected the display line.
- EUT complies as 6 dB BW > 500 kHz

905.2 MHz: Observed 6 dB Bandwidth is 0.558 MHz
913.5 MHz: Observed 6 dB Bandwidth is 0.575 MHz



905.2 MHz: Observed 6 dB Bandwidth is 0.558 MHz



913.5 MHz: Observed 6 dB Bandwidth is 0.575 MHz

Peak Output Power

(3) For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the *maximum conducted output power* is the highest total transmit power occurring in any mode.

Test Conditions:

Sample Number:	EX20 CO	Temperature:	23°C
Date:	Aug. 2, 2013	Humidity:	59%
Modification State:	Low and High Channel	Tester:	Alan Laudani
		Laboratory:	Nemko

Test Results: EUT Complies

See attached plots.

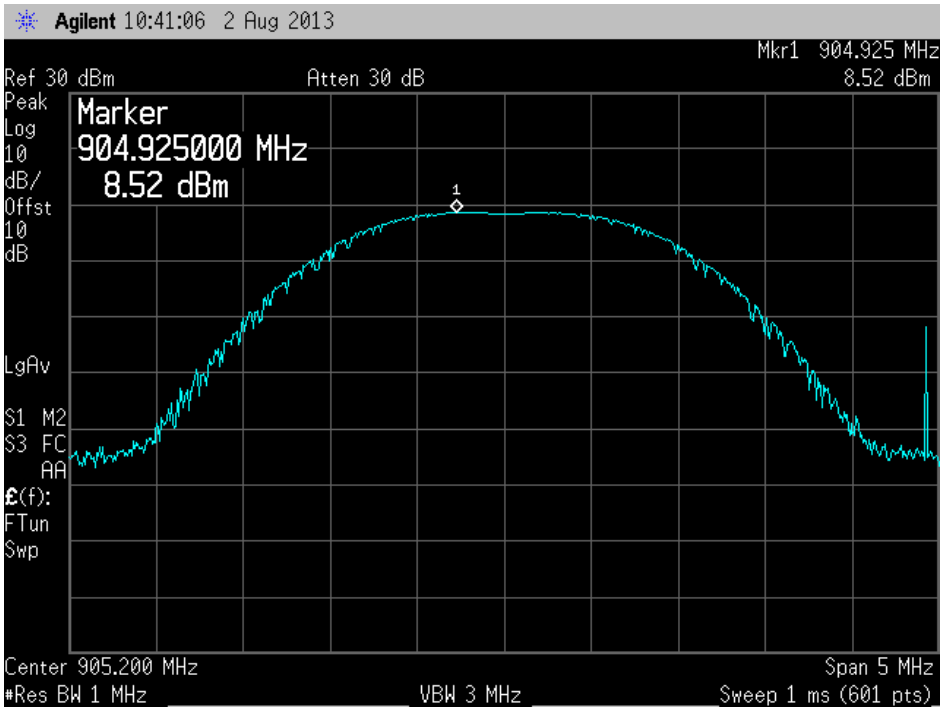
Additional Observations:

- This is a conducted test. 10.0 dB was offset for the attenuator used.
- Input voltage to the EUT was varied from 120 Vac +/-15%. It was repeated with a fresh battery under back up battery power. No variation in results observed.
- RBW = 1 MHz; VBW = 3 MHz.
- Max Hold, Peak

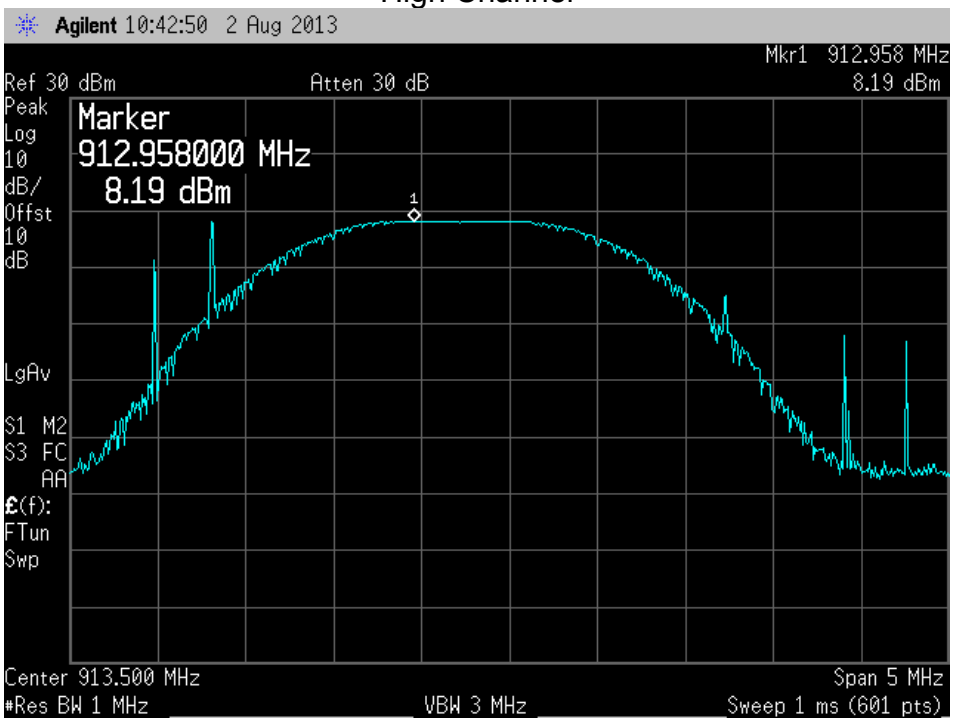
Channel Range	Peak Power Output (dBm)	Antenna Gain	Peak Power Output (W)	EIRP (W)
905.2 MHz	8.52	0 dBi	0.007	0.007
913.2 MHz	8.19	0 dBi		

Test Plots:

Low Channel



High Channel



Spurious RF Conducted Emissions

(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)).

Test Conditions:

Sample Number:	EX20 CO	Temperature:	25°C
Date:	7/29/2013	Humidity:	59%
Modification State:	Low and High Channel	Tester:	ALAN LAUDANI
		Laboratory:	3m SAC

Test Results: EUT complies in Battery mode for Digital Emission and RF Transmit Harmonics

- RBW = 120 kHz, VBW = 300 kHz, peak hold, conducted on artificial antenna port.
- No peaks were evident so Quasi-peak measurements were deemed unnecessary
- Fresh batteries were used during assessment of Back-up Battery Mode
- RF Transmit Harmonics were deemed worst case in AC powered mode.

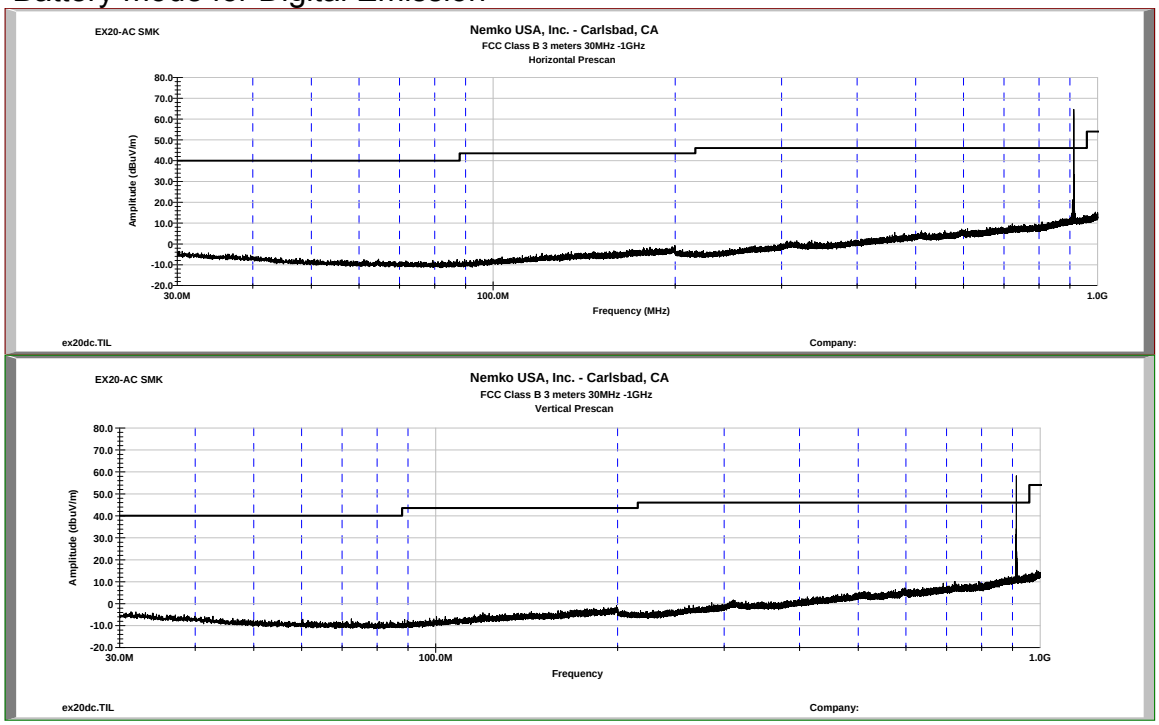
Sample Computation (Radiated Emissions Data Sheet):

Average Result @ 7305.6 MHz

Correction factor = 7.1 dBµV/m
= Antenna factor + Cable loss – Preamp gain
= 36.5 + 13.6 – 42.9 = 7.2 dBµV/m

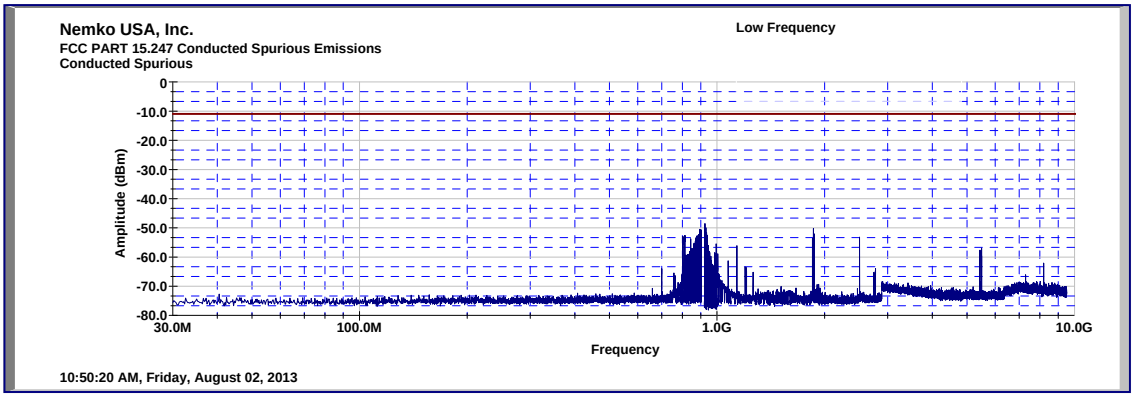
Corrected reading = Max reading + Correction factor + DCCF
= 52.6 + 7.2 – 6.3
= 53.5 dBµV/m

Battery mode for Digital Emission

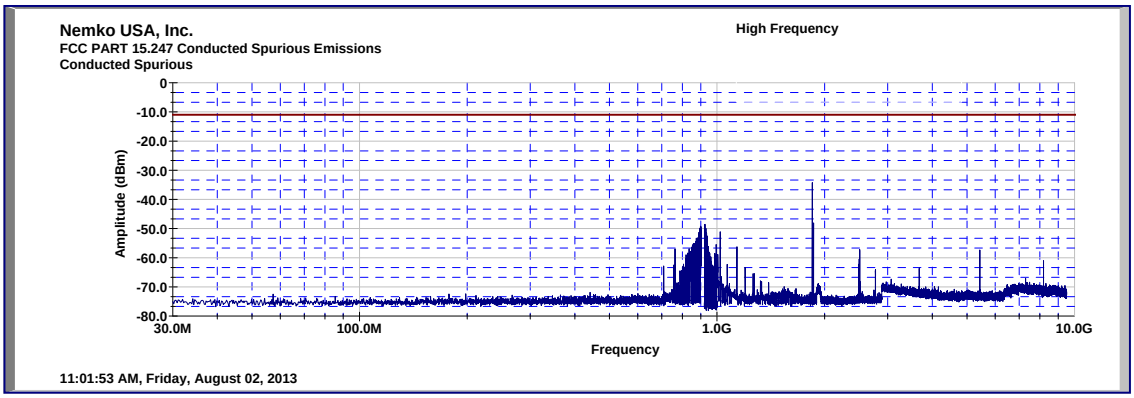


Conducted RF Harmonics

905.2 MHz



913.2 MHz



Spurious Radiated Emissions

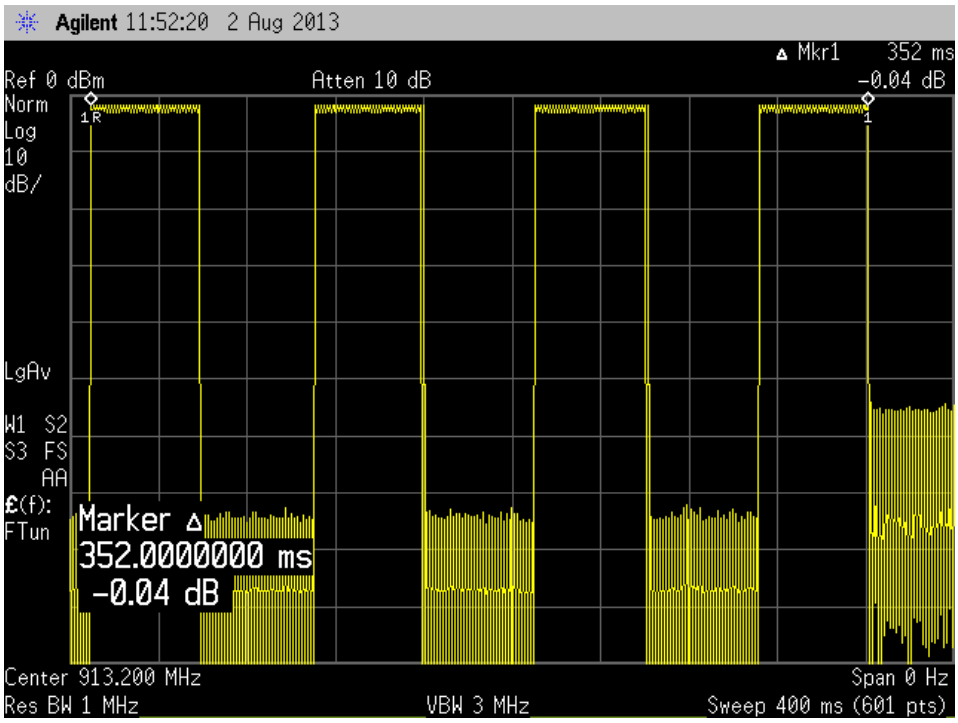
(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains 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)).

Test Conditions:

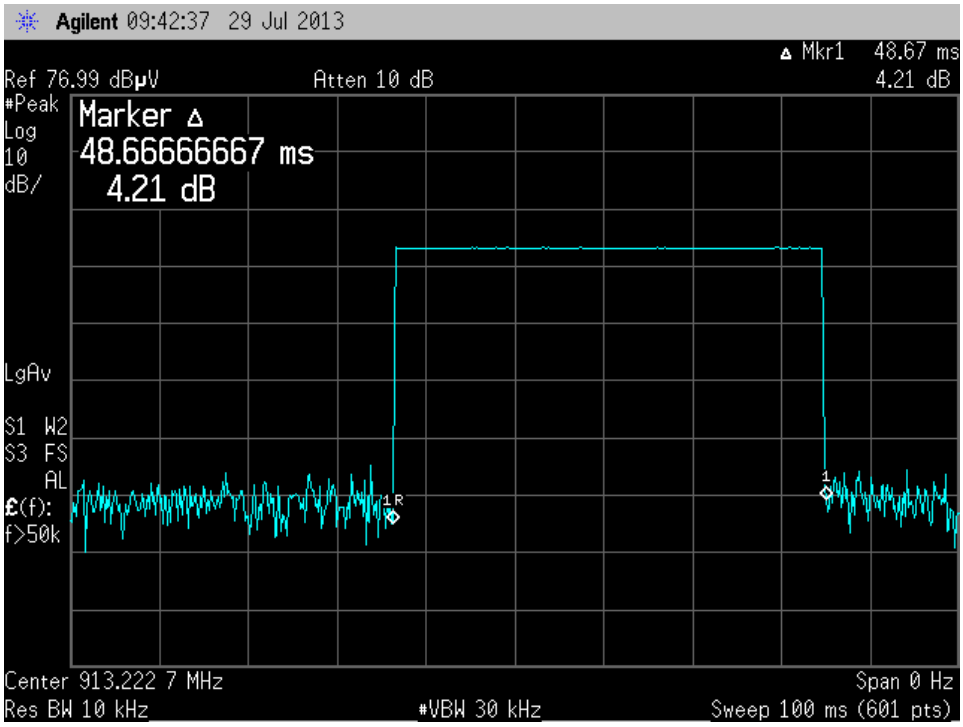
Sample Number:	EX20 CO	Temperature:	22°C
Date:	Aug. 2, 2013	Humidity:	57%
Modification State:	Transmit with modulation	Tester:	Alan Laudani
		Laboratory:	Nemko

Test Results: EUT complies.
Emissions were searched from 30MHz to 9500 MHz, no other emissions within 20 dB of the limit were detected.
Peak hold measurements.
Harmonic measurements were made with EUT in worst case physical mounting orientation of horizontal.

Duty Cycle



DCCF = Duty Cycle Correction Factor = 20 x log 48.67ms/100ms = -6.3 dB



Radiated Spurious in the Restricted Bands

Radiated Emissions Data

Job # :	Q10247985	Date :	8-2-2013	Page 1 of 1	
NEX #:	241153	Time :	7 am		
		Staff :	AAL		
Client Name :	Exigent Sensors LLC			EUT Voltage :	120/3
EUT Name :	Smoke Alarm			EUT Frequency :	N/A
EUT Model # :	EX20 CO			Phase:	N/A
EUT Serial # :	Unit 2 with WW inductor				
EUT Config. :	continuous transmit			Distance < 1000 MHz:	3 m
				Distance > 1000 MHz:	3 m
Specification :	CFR47 Part 15, Subpart C	15.247			
Loop Ant. #:	NA				
Bicon Ant.#:	NA	Temp. (°C) :	22		
Log Ant.#:	111_3m	Humidity (%) :	57		
DRG Ant. #	529	Spec Analyzer #:	911		
Cable LF#:	SAC_10m	Analyzer Display #:	911		
Cable HF#:	WCC	Quasi-Peak Detector #:	911		
Preamp LF#:	NA	Duty Cycle (%):	48.67		
Preamp HF#	1029				

Quasi-Peak	RBW: 120 kHz
	Video Bandwidth 300 kHz
Peak	RBW: 100 kHa
	Video Bandwidth 300 kHz
Average = Peak + DCCF	

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 DEG	Ant. Height cm	Max. Reading (dBµV/m)	Corrected Reading (dBµV/m)	Spec. limit (dBµV/m)	CR/SL Diff. (dB)	Pass Fail	Comment
905.2	61.0	65.0	Q	172	153	65.0	91.4	94.0	-2.6	Pass	Horizontal
905.2	62.2	62.5	Q	135	161	62.5	88.9	94.0	-5.1	Pass	Vertical
913.2			P				26.4	114.0	-87.6	Pass	
913.2	56.0	60.2	Q	112	100	60.2	86.6	94.0	-7.4	Pass	Vertical
913.2	67.4	65.0	Q	245	100	67.4	93.8	94.0	-0.2	Pass	horizontal
2715.6	48.3	46.7	P	139	139	48.3	45.5	74.0	-28.5	Pass	1st CH
2739.6	60.8	43.4	P			60.8	58.0	74.0	-16.0	Pass	2nd CH
2739.6	60.8	43.4	A			60.8	51.8	54.0	-2.2	Pass	
3620.8	46.1	43.5	P	144	147	46.1	46.0	74.0	-28.0	Pass	1st CH
3652.8	51.3	49.5	P			51.3	51.2	74.0	-22.8	Pass	2nd CH
											2nd CH
4526.0	44.9	40.8	P	127	107	44.9	45.9	74.0	-28.1	Pass	UNIT 2 ww
4526.0	44.9	40.8	A			44.9	39.6	54.0	-14.4	Pass	
4526.0	44.9	40.8	A			44.9	39.6	54.0	-14.4	Pass	1st CH
4566.0	42.4	46.6	P	93	100	46.6	47.6	74.0	-26.4	Pass	2nd CH
5479.2	42.6	45.7	P	107	100	45.7	49.6	74.0	-24.4	Pass	2nd CH
5479.2	42.6	45.7	A			45.7	43.3	54.0	-10.6	Pass	UNIT 2 ww
7305.6	47.4	46.6	P	27	125	47.4	54.5	74.0	-19.4	Pass	2nd CH
7305.6	47.4	46.6	A			47.4	48.3	54.0	-5.7	Pass	
8146.8	45.4	46.5	P	158	140	46.5	55.0	74.0	-19.0	Pass	1st CH
8146.8	45.4	46.5	A			46.5	48.8	54.0	-5.2	Pass	
8218.8	46.3	45.9	P	141	135	46.3	54.9	74.0	-19.1	Pass	2nd CH
8218.8	46.3	45.9	A			46.3	48.6	54.0	-5.4	Pass	2nd CH
9052.0	42.4	39.0	P	145	125	42.4	52.2	74.0	-21.8	Pass	1st CH
9132.0	45.6	44.3	P	140	120	45.6	55.3	74.0	-18.7	Pass	2nd CH
9132.0	45.6	44.3	A			45.6	49.1	54.0	-4.9	Pass	2nd CH

Power Spectral Density for Digitally Modulated Devices

(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Test Conditions:

Sample Number:	EX20 CO	Temperature:	21°C
Date:	August 2, 2013	Humidity:	39%
Modification State:	Low and High Channel	Tester:	Alan Laudani
		Laboratory:	Nemko

Test Results:

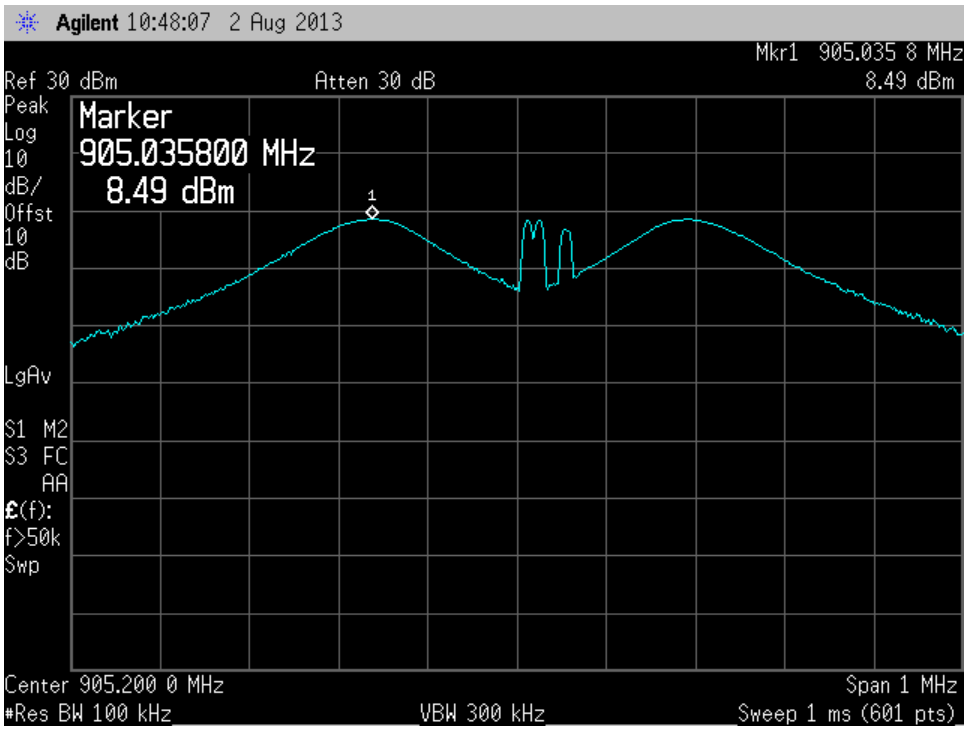
See attached plots.

Additional Observations:

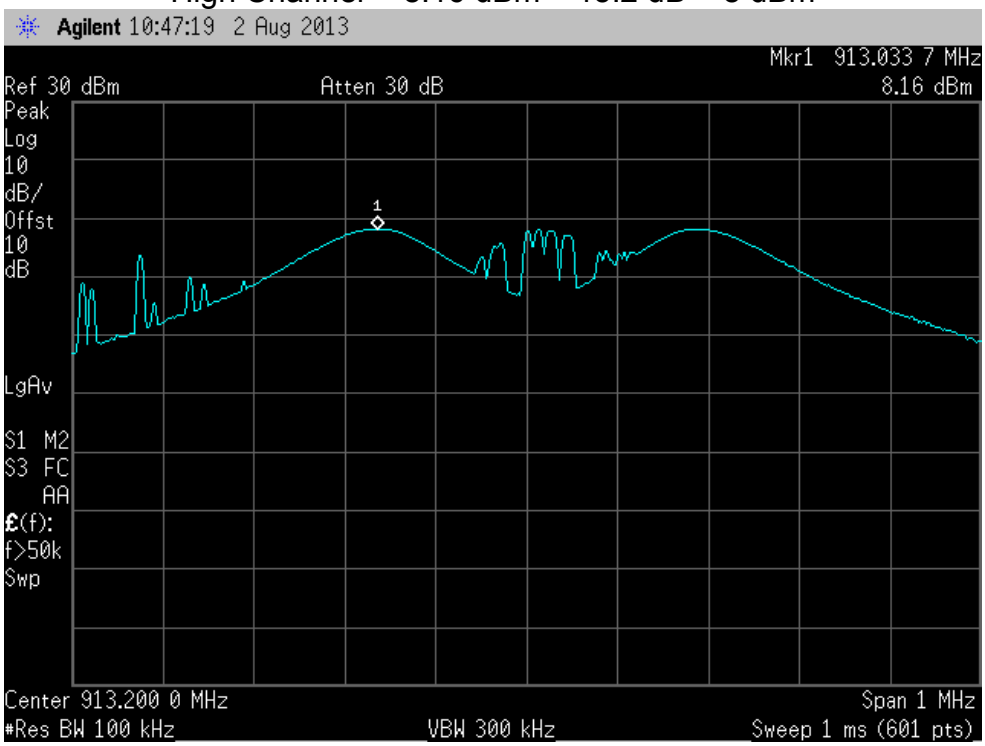
This is a conducted test. 10 dB was offset for the attenuator used.

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 100 kHz.
3. Set the VBW ≥ 300 kHz.
4. Set the span to 5-30 % greater than the EBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
10. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log (3 kHz/100 kHz = -15.2 dB).
11. The resulting peak PSD level must be ≤ 8 dBm.

Low Channel – 8.49 dBm – 15.2 dB < 8 dBm



High Channel -- 8.16 dBm – 15.2 dB < 8 dBm



Receiver Spurious Radiated Emissions

The following receiver spurious emission limits shall be complied with:
(a) If a radiated measurement is made, all spurious emissions shall comply with the limits of Table 1.
Table 1 - Spurious Emission Limits for Receivers

Spurious Frequency (MHz)	Field Strength (microvolt/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960	500

Test Conditions:

Sample Number:	EX20 CO	Temperature:	21°C
Date:	Aug. 2, 2013	Humidity:	39%
Modification State:	Receive mode	Tester:	Alan Laudani
		Laboratory:	Nemko

Test Results:

See attached test result.

Additional Observations:

- The Spectrum was searched from 30MHz to 5000 MHz.
- EUT operated on “test receive mode”.
- Below 1GHz measurements are measured using CISPR quasi-peak detector while above 1GHz are measured using average detector with 1MHz RBW. No emissions close enough to the limit to warrant QP measurements to be made.

DC receive mode—No emissions above 1 GHz