Nemko Test Report:	159822-1TRFWL
Applicant:	Peak Gain Systems Inc. 31 Blue Grouse Road Vaughan, ON Canada, L6A 4B8
Apparatus:	Traffic Radar
FCC ID:	Y4YLONGBOW
In Accordance With:	FCC Part 15 Subpart C, 15.245 Operation within the bands 902-928 MHz, 2435-2465 MHz, 5785-5815 MHz, 10500-10550 MHz and 24075-24175 MHz
Authorized By:	 Sim Jagpal, General Manager
Date:	February 10, 2011
Total Number of Pages:	17

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Section 1 : Report Summary

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, Subpart C. Radiated tests were conducted in accordance with ANSI C63.4-2003.

The assessment summary is as follows:

Apparatus Assessed:	Traffic Radar
Specification:	FCC Part 15 Subpart C, 15.245
Compliance Status:	Complies
Exclusions:	None
Non-compliances:	None
Report Release History:	Original Release
Test Location:	Nemko Canada Inc. 303 River Road Ottawa, Ontario K1V 1H2
Registration Number:	176392 (3m Semi-Anechoic Chamber)
Tests Performed By:	Kevin Ma, Technical Assessor
Test Dates:	December 13-15, 2010

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. All results contain in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

Section 2 : Equipment Under Test

2.1 Identification of Equipment Under Test (EUT)

The following information identifies the EUT under test:

Type of Equipment:	Traffic Radar
Brand Name:	Simicon
Model Name or Number:	LONGBOW-M
Serial Number:	5189
Nemko Sample Number:	1
FCC ID:	Y4YLONGBOW
Date of Receipt:	October 27, 2010

2.2 Accessories

The following information identifies accessories used to exercise the EUT during testing:

Description:	Regulated Power Supply
Brand Name:	Pyramid
Model Name or Number:	PS-9KX
Serial Number:	N/A
Nemko Sample Number:	2
Connection Port:	DC Port
Cable Length and Type:	1m

2.3 EUT Description

EUT is a K-band Traffic Radar.

2.4 Technical Specifications of the EUT

Operating Band: 24075 – 24175 MHz

Operating Frequency: 24.155 GHz

Modulation: CW

Occupied Bandwidth: 280 kHz

Emission Designator: N0N

Antenna Data: Integral, 19 dBi

Power Supply Requirements: 12-14.5 VDC

2.5 EUT Setup diagram

2.6 Operation of the EUT during testing

EUT was set to constant transmitting during the test.

2.7 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

Section 3 : Test Conditions

3.1 Specifications

The apparatus was assessed against the following specifications:

FCC Part 15 Subpart C, 15.245

Operation within the bands 902-928 MHz, 2435-2465 MHz, 5785-5815 MHz, 10500-10550 MHz and 24075-24175 MHz

3.2 Deviations From Laboratory Test Procedures

No deviations were made from laboratory test procedures.

3.3 Test Environment

All tests were performed under the following environmental conditions:

Temperature range	:	15 – 30 ^{o}C
Humidity range	:	20 - 75 %
Pressure range	:	86 - 106 kPa
Power supply range	:	+/- 5% of rated voltages

3.4 Measurement Uncertainty

Nemko Canada measurement uncertainty has been calculated using guidance of UKAS LAB 34:2003 and TIA-603-B Nov 7, 2002. All calculations have been performed to provide a confidence level of 95% and can be found in Nemko Canada document MU-003.

3.5 Test Equipment

Equipment	Manufacturer	Model No.	Asset/Serial No.	Cal. Date	Next Cal.
3 m EMI Test Chamber	TDK	SAC-3	FA002047	Mar. 09/10	Mar. 09/11
Flush Mount Turntable	Sunol	FM2022	FA002082	NCR	NCR
Controller	Sunol	SC104V	FA002060	NCR	NCR
Antenna Mast	Sunol	TLT2	FA002061	NCR	NCR
International Power Supply	California Inst.	3001i	FA001021	COU	COU
Receiver/Spectrum Analyzer	Rohde & Schwarz	ESU 26	FA002043	Jan. 14/10	Jan. 14/11
Spectrum Analyzer	Rohde & Schwarz	FSU46	FA001877	Dec. 02/10	Dec. 02/11
Bilog Antenna	Sunol	JB3	FA002108	Jan. 18/10	Jan. 18/11
Horn Antenna #2	EMCO	3115	FA000825	Jan. 18/10	Jan. 18/11
1–18 GHz Amplifier	JCA	JCA118-503	FA002091	Oct 07/10	Oct 07/11
18.0 – 40.0GHz Horn Antenna	EMCO	3116	FA001847	May 13/10	May 13/11
18–26 GHz Amplifier	NARDA	BBS-1826N612	FA001550	COU	COU
26 – 40.0 GHz Amplifier	NARDA	DBL-2640N610	FA001556	COU	COU
Spectrum Analyzer	Rohde & Schwarz	FSP 40	FA001920	May 17/11	May 17/11
Mixer/Antenna (40-60GHz)	Olsen	M19HWA	FA001523	VOU	VOU
Mixer/Antenna (60-90GHz)	Olsen	M12HWA	FA001524	VOU	VOU
Mixer/Antenna (90-140GHz)	Olsen	M08HWA	FA001525	VOU	VOU
Harmonic Generator	Olsen	40200WGS	FA001546	VOU	VOU

COU – Calibrate on Use
VOU – Verification on Use
NCR – No Calibration Required

Section 4 : Results Summary

This section contains the following:

FCC Part 15 Subpart C : Test Results

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 Report Summary)

4.1 FCC Part 15 Subpart C : Test Results

Part 15	Test Description	Required	Result
15.31(e)	Variation of power supply	Y	PASS
15.207(a)	Powerline Conducted Emissions	Y	PASS
15.209(a)	Radiated Emissions within Restricted Bands	Y	PASS
15.215(c)	20dB Bandwidth	Y	PASS
15.245(b)	Radiated emissions not in Restricted Bands	Y	PASS

Notes: None.

Appendix A : Test Results

Clause 15.207(a) Powerline Conducted Emissions

Frequency of Conducted limit (dBµV)

Emission (MHz)	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

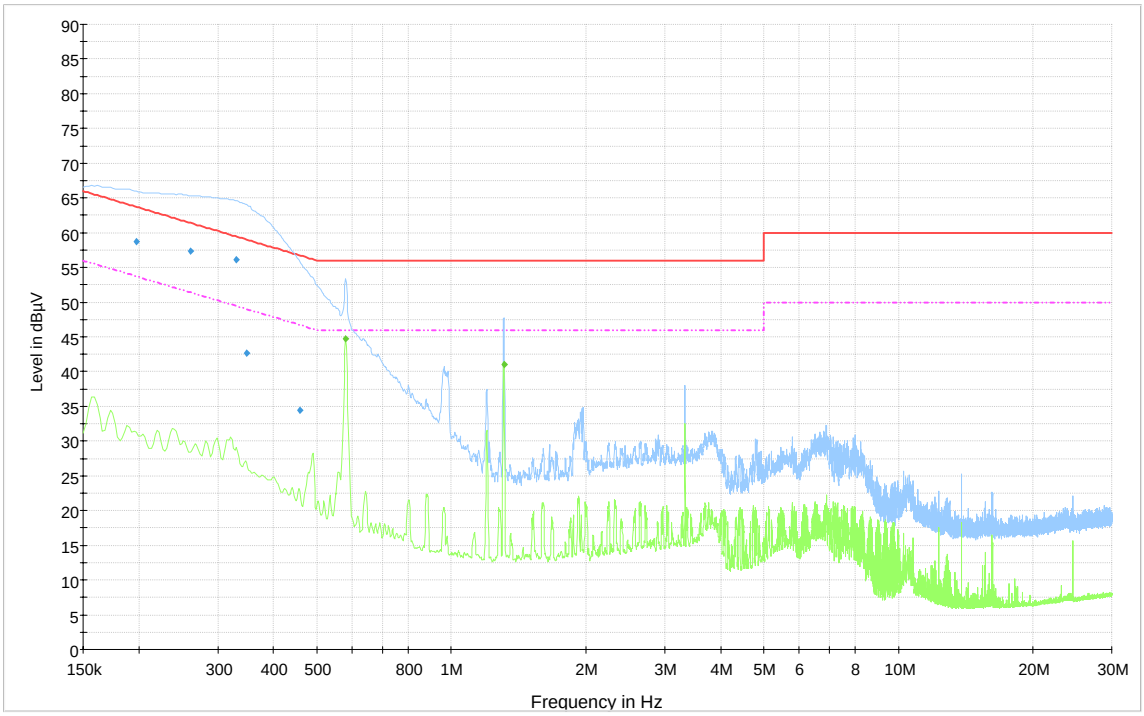
* Decreases with the logarithm of the frequency.

Test Results: Pass

Additional Observations:

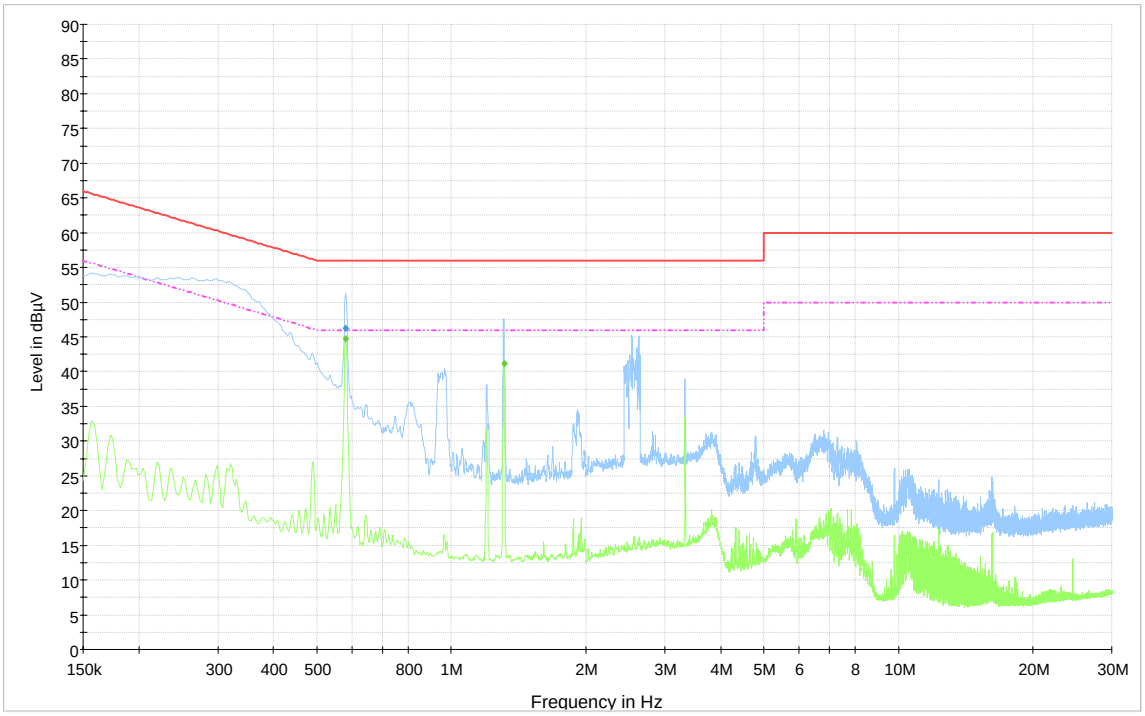
All plots were obtained using a sweeping receiver with an IF of 9kHz using a Peak and Average detector. The plots have been corrected with the cable loss and LISN loss to show compliance.

Phase



Frequency (MHz)	QuasiPeak Result (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Conductor	Correction (dB)	Margin (dB)	Limit (dBµV)
0.197250	58.7	100.0	9.000	On	L1	10.0	5.0	63.7
0.260250	57.4	100.0	9.000	On	L1	10.0	4.0	61.4
0.330000	56.2	100.0	9.000	On	L1	10.0	3.3	59.5
0.348000	42.6	100.0	9.000	On	L1	10.0	16.4	59.0
0.458250	34.4	100.0	9.000	On	L1	10.1	22.3	56.7
Frequency (MHz)	Average Result (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Conductor	Correction (dB)	Margin (dB)	Limit (dBµV)
0.579750	44.7	100.0	9.000	On	L1	10.1	1.3	46.0
1.311000	41.0	100.0	9.000	On	L1	10.0	5.0	46.0

Neutral



Frequency (MHz)	QuasiPeak Result (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Conductor	Correction (dB)	Margin (dB)	Limit (dBµV)
0.579750	46.2	100.0	9.000	On	N	10.1	9.8	56.0
Frequency (MHz)	Average Result (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Conductor	Correction (dB)	Margin (dB)	Limit (dBµV)
0.579750	44.8	100.0	9.000	On	N	10.1	1.2	46.0
1.311000	41.2	100.0	9.000	On	N	10.0	4.8	46.0

Clause 15.209(a) Radiated Emissions within Restricted Bands

Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvoltsmeter)	Measurement Distance (meters)
0.009-0.490	2400/F (kHz)	300
0.490-1.705	24000/F (kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Results: Pass

Additional Observations:

The Spectrum was searched from 30MHz to the 40 GHz.

These results apply to emissions found in the Restricted bands defined in FCC Part 15 Subpart C, 15.205.

Peak Detector with 100 kHz/300 kHz RBW/VBW was used for measurements below 1 GHz and 1 MHz/3 MHz RBW/VBW for frequencies above 1 GHz peak field strength measurement, and 1 MHz/10 Hz RBW/VBW for average field strength measurement.

The EUT was measured on three orthogonal axis.

All tests were performed with new battery.

All measurements were performed at 3m.

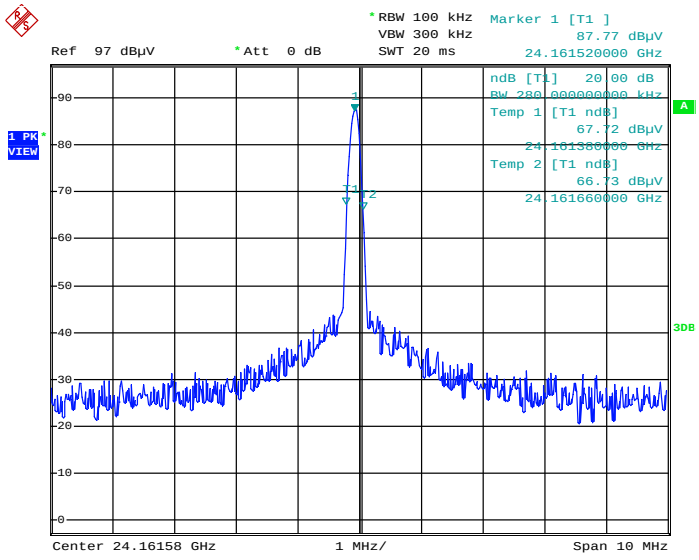
Freq. GHz	Pol.	Peak Field Strength dBµV/m	Peak Limit dBµV/m	Margin dB	Average Field Strength dBµV/m	Average Limit dBµV/m	Margin dB
23.062	V	49.28	74.00	24.72	48.26	54.00	5.74
23.062	H	48.26	74.00	25.74	46.85	54.00	7.15

Clause 15.215(c) 20dB Bandwidth

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 Results: Pass

20dB Bandwidth:



20 dB Bandwidth: 280 kHz

Clause 15.245(b) Radiated emissions not in Restricted Bands

Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (millivolts/meter)
902-928	500	1.6
2435-2465	500	1.6
5785-5815	500	1.6
10500-10550	2500	25.0
24075-24175	2500	25.0

Test Results: Pass

Additional Observations:

The Spectrum was searched from 30MHz to the 100 GHz.

Peak Detector with 100 kHz/300 kHz RBW/VBW was used for measurements below 1 GHz and 1 MHz/3 MHz RBW/VBW for frequencies above 1 GHz peak value, and 1 MHz/10 Hz RBW/VBW for frequencies above 1 GHz average value.

The EUT was measured on three orthogonal axis.

All tests were performed with new battery.

Fundamental:

Freq. GHz	Antenna Type	Test Distance m	Receiver Level dBµV	Correction Factor dB	Field Strength dBµV/m	Limits @ 3m dBµV/m	Margin dB
Peak							
24.155	Horn	3	74.60	50.3	124.90	147.95	23.05
Average							
24.155	Horn	3	74.12	50.3	124.42	127.95	3.53

Note: Correction Factor =: Antenna factor + cable loss

Harmonics:

Freq. GHz	Antenna Type	Test Distance m	Receiver Level dBµV	Correction Factor dB	Field Strength @ 1m dBµV/m	Field Strength @ 3m dBµV/m	Limits @ 3m dBµV/m	Margin dB
Peak								
72.455	Horn	1	11.72	89.1	100.82	90.82	107.95	17.13
Average								
72.455	Horn	1	2.38	89.1	91.48	81.48	87.95	6.47

Note: Correction Factor =: Antenna factor + Mixer loss +cable loss

No other spurious emissions were detected more than 20 dB below the limit.

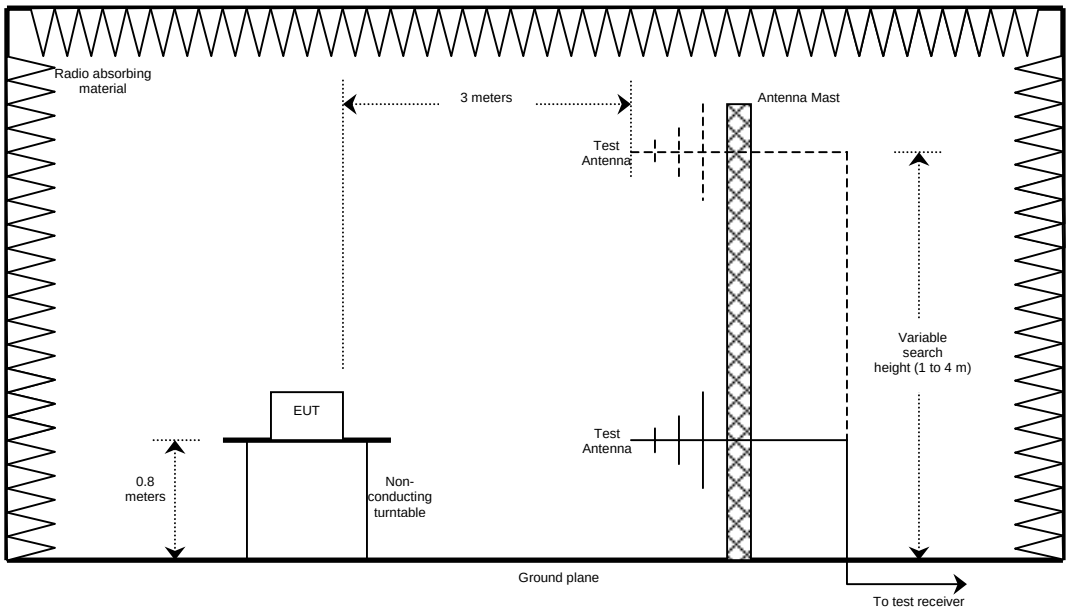
Appendix B : Setup Photographs

Conducted Emissions Setup:

Spurious Emissions Setup:

Appendix C : Block Diagram of Test Setups

Radiated Emissions above 30MHz Test Site



Conducted Emissions Test Site