

TEST REPORT



Testing Certification # 1367-01

Laboratory ID

PRODUCT SAFETY ENGINEERING, INC.
12955 Bellamy Brothers Boulevard
Dade City, Florida 33525 USA
PH (352) 588-2209 FX (352) 588-2544

Submitter ID

Peek Traffic Corporation
2511 Corporate Way

Palmetto, FL 34221

Report Issue Date: 30 Aug 2012

Sample S/N: None

Sample Receipt Date: 14 Aug 2012

Sample Test Date: see data sheets

Test Report Number: 12F283

Model Designation: SL58P

Product Description: Loop Detector Board

Description of non-standard test method or test practice: *None*

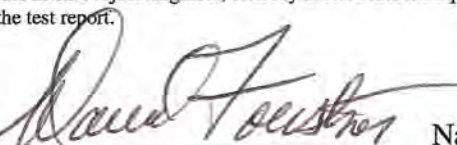
Estimated Measurement Uncertainty: *See page 9. This uncertainty represents and expanded uncertainty expressed at approximately 95% confidence level using a coverage factor of k=2.*

Special limitations of use: *None*

Traceability: *reference standards of measurement have been calibrated by a competent body using standards traceable to the NIST.*

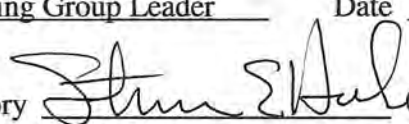
According to testing performed at Product Safety Engineering, Inc., the above-mentioned unit is in compliance with the electromagnetic compatibility requirements defined in regulations indicated on page (4) of the test report. The test results contained herein relate only to the item identified above. It is the manufacturer's responsibility to assure that additional production units are manufactured with identical electrical and mechanical characteristics.

As the responsible EMC Project Engineer, I hereby declare that the equipment tested as specified above conforms to the requirements indicated on page (3) of the test report.

Signature  Name David Foerstner

Title Engineering Group Leader Date 30 Aug 2012

Reviewed by:

Approved Signatory  Date 30 Aug 2012

Steve Hoke (EMC Site Manager)

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Product Safety Engineering, Inc 12955 Bellamy Brothers Blvd. Dade City, FL 33525
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FCC / IC Test Results Summary

Test	Requirement	Measured	Pass/Fail	Data Page(s)
Radiated emissions limit per 15.209 Intentional Radiator	(9- 490) kHz = 2400/f(kHz) uV/m @ 3 meters	See data	Pass	
Conducted emissions limit	15.107 & 15.207	N/A (battery only)	Pass	
Restricted bands	15.205	None in bands	Pass	

CE Test Results Summary

Test	Requirement	Measured	Pass/Fail	Data Page(s)
Permitted range of operating frequencies	(9) kHz to (30) MHz	(49.6 - 84.2) kHz	Pass	
Permitted range of modulation bandwidth	23 dB below the carrier	0 Hz	Pass	
Emission Limits	Table 5 - 300 330-1	See data	Pass	
Transmitter spurious and out of band emissions per 7.5.2	Product Class 3 only	N/A	Pass	
Effective radiated power	Table 9 - 300 330-1	None	Pass	

Revision History

Revision	Date	Description
---	08/30/2012	Initial Release

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EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

- ☐ - EN 61000-6-3:2007
 - ☐ - EN 61000-6-4:2007

 - ☐ - EN 55011 : 2009/A1:2010
 - ☐ - Group 1
 - ☐ - Class A
 - ☐ - Group 2
 - ☐ - Class B
 - - EN ETSI 300 330-1 V1.7.1
 - - EN ETSI 300 330-2 V1.5.1
 - ☐ - EN 55014 -1: 2006
 - ☐ - Household appliances and similar
 - ☐ - Portable tools
 - ☐ - Semiconductor devices

 - ☐ - EN 55022:2010
 - ☐ - Class A
 - ☐ - Class B
 - ☐ -AS/NZS CISPR 22
 - ☐ - Class A
 - ☐ - Class B
 - - RSS-GEN
 - ☐ - Class A
 - ☐ - Class B
 - ☐ - CNS 13438
 - ☐ - Class A
 - ☐ - Class B
 - ☐ - VCCI V-3/2010.4
 - ☐ - Class A
 - ☐ - Class B
 - - FCC Part 15 (per ANSI C63.4)
 - ☐ - Class A
 - ☐ - Class B
 - - Certification
 - ☐ - Verification
 - ☐ - Declaration of Conformity
-
- ☐ - FCC Part 18

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Environmental conditions during testing:

	LAB	OATS
Temperature: *	_____	: _____
Relative Humidity: **	_____	: _____

* The ambient temperature during the testing was within the range of (50° - 104° F) unless indicted above.
** The humidity levels during the testing was within the range of (10% - 90%) relative humidity unless indicated above.

Power supply system : _____* Volts _____ Hz _____phase
* Internal Battery

Sign Explanations:

- - not applicable
- - applicable

Emissions Test Conditions: CONDUCTED EMISSIONS (Interference Voltage)

The *CONDUCTED EMISSIONS (INTERFERENCE VOLTAGE)* measurements were performed at the following test location:

☒ - Test not applicable

- ☐ - Darby Test Site (Open Area Test Site)
☐ - Darby Laboratory

Test equipment used :

	Model Number	Manufacturer	Description	Serial Number
☐ -	8028-50	Solar	50 Ω LISN	829012, 829022
☐ -	8012	Solar	50 Ω LISN	924840
☐ -	EMC-30	Electro-Metrics	EMI Receiver	191
☐ -	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
☐ -	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
☐ -	85662A	Hewlett Packard	Analyzer Display	2403A07352
☐ -	8028-50	Solar	50 Ω LISN	903725, 903726
☐ -	FCC-TLISN-T4-02	Fisher Custom Com.	Telecom ISN	20454
☐ -	FCC-TLISN-T8-02	Fisher Custom Com.	Telecom ISN	20452
☐ -	LI-125	Com-Power	50 Ω LISN	191080/191081

Emissions Test Conditions: RADIATED EMISSIONS (Magnetic Field)

The *RADIATED EMISSIONS (MAGNETIC FIELD)* measurements were performed at the following test location:

- ☒ - Darby Test Site (Open Area Test Site)
☐ -
☐ -

at a test distance of :

- ☒ - 3 meters
☐ - 30 meters

☐ - Test not applicable

Test equipment used :

	Model Number	Manufacturer	Description	Serial Number
☐ -	3148	EMCO	Log Periodic Antenna	00044783
☐ -	BIA-25	Electro-Metrics	Biconical Antenna	4283
☒ -	8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
☒ -	85662A	Hewlett-Packard	Analyzer Display	2403A07352
☒ -	85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
☒ -	ALR-30M	Electro-Metrics	Loop Antenna	824
☐ -	8447D	Hewlett Packard	Preamplifier	2944A06832
☐ -	EMC-30	Electro-Metrics	EMI Receiver	191
☐ -	ALA-130/A	Antenna Research	Loop Antenna	106

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Emissions Test Conditions: RADIATED EMISSIONS (Electric Field)

The *RADIATED EMISSIONS (ELECTRIC FIELD)* measurements, in the frequency range of 30 MHz-1000 MHz, were tested in a horizontal and vertical polarization at the following test location :

☐ - Test not applicable

- ☐ - Darby Site (Open Area Test Site)
- ☐ - Darby Lab
- ☐ -

at a test distance of :

- ☒ - 3 meters
- ☐ - 10 meters
- ☐ - 30 meters

Test equipment used :

Model Number	Manufacturer	Description	Serial Number
☐ - HLP 3003C	EMC Automation	Hybrid Periodic Antenna	017501
☒ - 8447D	Hewlett-Packard	Preamplifier (26dB)	1937A03247
☒ - 8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
☒ - 85662A	Hewlett-Packard	Analyzer Display	2403A07352
☒ - 85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
☐ - BIA 25	Electro-Metrics	Biconical Antenna	4283
☐ - EMC-30	Electro-Metrics	EMI Receiver	191
☐ - 8568B	Hewlett Packard	Spectrum Analyzer	2407A03213
☐ - 85650A	Hewlett Packard	Quasi-Peak Adapter	2043A00358
☐ - 85662A	Hewlett Packard	Analyzer Display	2340A05806
☐ - LPA30	Electro-Metrics	Log Periodic	2280
☒ - 3104C	Emco	Biconical Antenna	00075927
☒ - 9005	Eaton	Log Periodic Antenna	1099

Emissions Test Conditions): INTERFERENCE POWER

The *INTERFERENCE POWER* measurements were performed by using the absorbing clamp on the mains and interface cables in the frequency range 30 MHz - 300 MHz at the following test location :

☒ - Test not applicable

- ☐ - Darby Lab
- ☐ -

Test equipment used :

Model Number	Manufacturer	Description	Serial Number
☐ - MDS-21	Rhode&Schwarz	Absorbing Clamp	8608447020
☐ - 8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
☐ - 85662A	Hewlett-Packard	Analyzer Display	2403A07352
☐ - 85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
☐ - 8447D	Hewlett-Packard	Amplifier (26 dB)	2944A06832
☐ - EMC-30	Electro-Metrics	EMI Receiver	191

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The *EQUIVALENT RADIATED EMISSIONS* measurements in the frequency range GHz - GHz were performed in a horizontal and vertical polarization at the following test location :

- ☐ - Darby Test Site (Open Area Test Site)
- ☐ -
- ☐ -
- ☐ -

at a test distance of:

- ☐ - 1 meters
- ☐ - 3 meters
- ☐ - 10 meters

■ - Test not applicable

Test equipment used :

Model Number	Manufacturer	Description	Serial Number
☐ - 8566B	Hewlett-Packard	Spectrum Analyzer	2421A00526
☐ - 85662A	Hewlett-Packard	Analyzer Display	2403A07352
☐ - 85650A	Hewlett-Packard	Quasi-Peak Adapter	2043A00209
☐ - 8449B	Hewlett-Packard	Preamplifier	3008A00320
☐ - 3115	Electro-Mechanics	Double Ridge Guide Horn	3810

The *ANTENNA TERMINAL DISTURBANCE VOLTAGE* in the frequency range 30 MHz - 1,000 MHz were performed.

- ☐ - Darby Test Site (Open Area Test Site)
- ☐ - Laboratory
- ☐ -
- ☐ -

■ - Test not applicable

Model Number	Manufacturer	Description	Serial Number
☐ - 2F9-3C4-3C5	Wavecom	UHF PAL TV Modulator	185879
☐ - 2F1-3C4-3C5	Wavecom	VHF PAL TV Modulator	157728
☐ - A-8000	IFR	Spectrum Analyzer	1306
☐ - 8648B	Hewlett-Packard	Signal Generator	3623A01433
☐ - 8648B	Hewlett-Packard	Signal Generator	3623A01477
☐ - LMV-182A	Leader	RMS Milli-Voltmeter	8010091
☐ - 3202	Krhon-Hite	Active filter	5899
☐ - FMT115	Leaming	FM Modulator	NONE
☐ - 371	UDT	Optical power meter	06657
☐ - TSG95	Tektronix	PAL video / Audio gen	B028883

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Equipment Under Test (EUT) Test Operation Mode - Emission tests :

The device under test was operated under the following conditions during emissions testing:

- ☐ - Standby
- ☐ - Test program (H - Pattern)
- ☐ - Test program (color bar)
- ☐ - Test program (customer specific)
- ☐ - Practice operation
- ☒ - Normal Operating Mode
- ☐ -

Configuration of the device under test:

- ☒ - See System Under Test Information in Appendix B

Rationale for EUT setup / configuration:

For FCC, we followed direction from FCC laboratory listed in similar Certified test report. Fo CE, we followed EN ETSI 300 330.

Emission Test Results:

Conducted emissions 150 kHz - 30 MHz

The requirements are ☐ - MET ☐ - NOT MET
Minimum limit margin dB at MHz
MU: 5.3 dB

Radiated emissions (magnetic field) 10 kHz - 30 MHz

The requirements are ☒ - MET ☐ - NOT MET
Minimum limit margin 28.0 dB at 0.049 MHz
MU: NA

Radiated emissions (electric field) 30 MHz - 1000 MHz

The requirements are ☒ - MET ☐ - NOT MET
Minimum limit margin 2.0 dB at 30.65 MHz
MU: 5.2 dB

Interference Power at the mains and interface cables 30 MHz - 300 MHz

The requirements are ☐ - MET ☐ - NOT MET
Minimum limit margin dB at MHz
MU: NA

Radiated emissions GHz - GHz

The requirements are ☐ - MET ☐ - NOT MET
Minimum limit margin dB at GHz
MU: 4.9 dB

Antenna Terminal Disturbance Voltage 30 MHz - 1,000 MHz

The requirements are ☐ - MET ☐ - NOT MET
Minimum limit margin dB at MHz
MU: NA

MU = Measurement Uncertainty

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GENERAL REMARKS:

SUMMARY:

The requirements according to the technical regulations are

- ☐ - met
- ☐ - **not** met.

The device under test does

- ☐ - fulfill the general approval requirements mentioned on page 3.
- ☐ - **not** fulfill the general approval requirements mentioned on page 3.

Testing Start Date 14 Aug 2012

Testing End Date: 16 Aug 2012

- PRODUCT SAFETY ENGINEERING INC -

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Test-setup photo(s):

Conducted emission 150 kHz - 30 MHz

N/A

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Test-setup photo(s):
Radiated emission 30 MHz - 1000 MHz



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APPENDIX

A

Test Equipment Calibration Information & Test Data Sheets

TEST EQUIPMENT CALIBRATION INFORMATION				
Manufacturer	Model	Description	Serial Number	Cal Due *
Hewlett Packard	8566B	Spectrum Analyzer	2421A00526	10/13/2012
Hewlett Packard	85662A	Display	2403A07352	10/13/2012
Hewlett Packard	85650A	Quasi-peak Adapter	2043A00209	9/6/2012
Hewlett Packard	8447D	Preamplifier 0.1 - 1,000 MHz	2944A06832	
Hewlett Packard	8447D	Preamplifier 0.1 - 1,000 MHz	2944A06901	
Hewlett Packard	8447D	Preamplifier 0.1 - 1,000 MHz	1937A03247	9/6/2012
Hewlett Packard	8449B	Preamplifier 1 - 26.5 GHz	3008A00320	5/7/2013
Hewlett Packard	E7402A	Portable Spectrum Analyzer	US40240204	
Eaton	96005	Log Periodic Antenna	1099	12/27/2013
Electro-Metrics	BIA-30	Biconical Antenna	3852	
EMCO	3104C	Biconical Antenna	75927	4/5/2013
Electro-Metrics	ALR30M	Magnetic Loop Antenna	824	11/9/2012
Electro-Metrics	EMC-30	EMI Receiver	191	
Electro-Metrics	3115	Double Ridge Guide Antenna	3810	
Solar	8028	LISN	829012/809022	
Com-Power	LI-125	LISN	191180/191181	
EMCO	3148	Log Periodic Antenna	75741	
Schwartzbeck	MDS-21	Absorbing Clamp	2581	
Fisher Custom	FCC-TLISN-T4-02	T LISN	20454	
Fisher Custom	FCC-TLISN-T8-02	Fisher Custom	20452	
		* Cal Due Date Format = MM/DD/YY		
All equipment was calibrated one year prior to the cal due date listed unless otherwise indicated				

EUT = 4 X 4 Loop w/ 4 turns and low frequency setting									
FCC / IC Requirements									
Freq	Measured	ACF	Preamp	Field Strength	Distance	Field Strength	Fundamental	Margin	Required
kHz	@ 3m	& CL	Gain		Correction 300 m to	Corrected	limit @ 300 m		Detector
	dBuV	dB	dB	dBuV/m	dB	dBuV/m	dBuV/m	dB	per 15.209(d)
82.4	14.1	59.3	0	73.4	80.0	-6.6	29.3	-35.9	AVG
165.8	4.5	53.6	0	58.1	80.0	-21.9	23.2	-45.1	AVG
247.2	-10.2	54.4	0	44.2	80.0	-35.8	19.7	-55.5	AVG
329.7	-15.6	53.6	0	38	80.0	-42.0	17.2	-59.2	AVG
412.1	-15.9	54.4	0	38.5	80.0	-41.5	15.3	-56.8	AVG
Limit = (20 log(2400 / frequency in kHz)) in dBuV/m *** for all frrequencies below (490) kHz									
All Harmonics Levels at frequencies greater than 412 kHz are less than -15 dBuV									
SA RBW = 200 Hz for Emissions Below 150 kHz and is = 9 kHz at and above 150 kHz									
9 - 490	2400/f(kHz) in uV/m at 300 m								
490 - 1,705	24000/f(kHz) in uV/m at 30 m								
1,705 - 30,000	30 uV/m at 30m								
CE Requirements									
Freq	Measured	ACF	Preamp	Field Strength	Distance	Field Strength	limit @ 10 m	Margin	Required
kHz	@ 3m	& CL	Gain	dBuV/m	Correction 10/3	Corrected	dBuV/m	dB	Detector
	dBuV	dB	dB		dB	dBuV/m			
* 82.43	20.3	59.3	0	79.6	20.9	58.7	119.2	-60.5	QP
** 164.8	14.7	59.3	0	74	20.9	53.1	66.0	-12.9	QP
** 247.2	0.5	59.3	0	59.8	20.9	38.9	64.0	-25.1	QP
** 329.7	-5	53.6	0	48.6	20.9	27.7	63.0	-35.3	QP
** 412.1	-5	53.7	0	48.7	20.9	27.8	62.0	-34.2	QP
All Harmonics Levels at frequencies greater than 412 kHz are less than -5 dBuV									
SA RBW = 200 Hz for Emissions Below 150 kHz and is = 9 kHz at and above 150 kHz									
* Fundamental limit = 123.5 dBuV/m at 10 m at 30 kHz & decending by 3dB / octive up to 90 kHz									
* Fundamental limit = 93.5 dBuV/m at 10 m at from 90 kHz to 119 kHz									
* Fundamental limit = 117.5 dBuV/m at 10 m at 119 kHz & decending by 3dB / octive up to 135 kHz									
** Spurious Limit = 78.5 dBuV/m at 10 m at 9kHz & decending by 3 dB / octive									

EUT = 6 X 6 Loop w/ 4 turns and low frequency setting										
FCC / IC Requirements										
Freq	Measured	ACF	Preamp	Field Strength	Distance	Field Strength	Fundamental	Margin	Required	
kHz	@ 3m	& CL	Gain		Correction 300 m to	Corrected	limit @ 300 m		Detector	
	dBuV	dB	dB	dBuV/m	dB	dBuV/m	dBuV/m	dB	per 15.209(d)	
68.1	15.9	61.2	0	77.1	80.0	-2.9	30.9	-33.8	AVG	
136.7	-9.2	59.3	0	50.1	80.0	-29.9	24.9	-54.8	AVG	
205.1	-2.6	53.6	0	51	80.0	-29.0	21.4	-50.4	AVG	
273.3	-12.6	53.6	0	41	80.0	-39.0	18.9	-57.9	AVG	
340.5	-17.6	53.7	0	36.1	80.0	-43.9	17.0	-60.9	AVG	
Limit = (20 log(2400 / frequency in kHz)) in dBuV/m *** for all frfrequencies below (490) kHz										
All Harmonics Levels at frequencies greater than 412 kHz are less than -15 dBuV										
SA RBW = 200 Hz for Emissions Below 150 kHz and is = 9 kHz at and above 150 kHz										
9 - 490	2400/f(kHz) in uV/m at 300 m									
490 - 1,705	24000/f(kHz) in uV/m at 30 m									
1,705 - 30,000	30 uV/m at 30m									
All Harmonics Levels at frequencies greater than 340 kHz are less than -15 dBuV										
SA RBW = 200 Hz for Emissions Below 150 kHz and is = 9 kHz at and above 150 kHz										
9 - 490	2400/f(kHz) in uV/m at 300 m									
490 - 1,705	24000/f(kHz) in uV/m at 30 m									
1,705 - 30,000	30 uV/m at 30m									
CE Requirements										
Freq	Measured	ACF	Preamp	Field Strength	Distance	Field Strength	Fundamental	Margin	Required	
kHz	@ 3m	& CL	Gain	dBuV/m	Correction 10/3	Corrected	limit @ 10 m		Detector	
	dBuV	dB	dB		dB	dBuV/m	dBuV/m	dB		
* 68.1	22.4	61.3	0	83.7	20.9	62.8	120.0	-57.2	QP	
** 136.7	1.6	59.3	0	60.9	20.9	40.0	66.7	-26.7	QP	
** 205.1	3.5	59.3	0	62.8	20.9	41.9	65.0	-23.1	QP	
** 273.3	-6.3	59.3	0	53	20.9	32.1	63.7	-31.6	QP	
** 340.5	-9.5	59.3	0	49.8	20.9	28.9	62.8	-33.9	QP	
All Harmonics Levels at frequencies greater than 412 kHz are less than -5 dBuV										
SA RBW = 200 Hz for Emissions Below 150 kHz and is = 9 kHz at and above 150 kHz										
* Fundamental limit = 123.5 dBuV/m at 10 m at 30 kHz & decending by 3dB / octive up to 90 kHz										
* Fundamental limit = 93.5 dBuV/m at 10 m at from 90 kHz to 119 kHz										
* Fundamental limit = 117.5 dBuV/m at 10 m at 119 kHz & decending by 3dB / octive up to 135 kHz										
** Spurious Limit = 78.5 dBuV/m at 10 m at 9kHz & decending by 3 dB / octive										

EUT = 6 X 6 Loop w/ 4 turns and high frequency setting									
FCC / IC Requirements									
Freq	Measured	ACF	Preamp	Field Strength	Distance Correction 300 m to	Field Strength Corrected	Fundamental limit @ 300 m	Margin	Required Detector
kHz	@ 3m	& CL	Gain		3				per 15.209(d)
	dBuV	dB	dB	dBuV/m	dB	dBuV/m	dBuV/m	dB	
84.2	13.6	59.3	0	72.9	80.0	-7.1	29.1	-36.2	AVG
168.4	2.3	53.6	0	55.9	80.0	-24.1	23.1	-47.2	AVG
252.8	-3.3	53.7	0	50.4	80.0	-29.6	19.5	-49.1	AVG
336.8	-11.6	54	0	42.4	80.0	-37.6	17.1	-54.7	AVG
421	-18.5	54.4	0	35.9	80.0	-44.1	15.1	-59.2	AVG
Limit = (20 log(2400 / frequency in kHz)) in dBuV/m *** for all frrequencies below (490) kHz									
All Harmonics Levels at frequencies greater than 412 kHz are less than -15 dBuV									
SA RBW = 200 Hz for Emissions Below 150 kHz and is = 9 kHz at and above 150 kHz									
9 - 490	2400/f(kHz) in uV/m at 300 m								
490 - 1,705	24000/f(kHz) in uV/m at 30 m								
1,705 - 30,000	30 uV/m at 30m								
CE Requirements									
Freq	Measured	ACF	Preamp	Field Strength	Distance Correction 10/3	Field Strength Corrected	Fundamental limit @ 10 m	Margin	Required Detector
kHz	@ 3m	& CL	Gain	dBuV/m			dBuV/m	dB	
	dBuV	dB	dB		dB	dBuV/m			
* 84.2	21.7	59.3	0	81	20.9	60.1	119.0	-58.9	QP
** 168.4	8.7	59.3	0	68	20.9	47.1	65.8	-18.7	QP
** 252.8	3.3	59.3	0	62.6	20.9	41.7	64.1	-22.4	QP
** 336.8	-5.2	59.3	0	54.1	20.9	33.2	62.8	-29.6	QP
** 421	-9.9	53.6	0	43.7	20.9	22.8	61.9	-39.1	QP
All Harmonics Levels at frequencies greater than 412 kHz are less than -5 dBuV									
SA RBW = 200 Hz for Emissions Below 150 kHz and is = 9 kHz at and above 150 kHz									
* Fundamental limit = 123.5 dBuV/m at 10 m at 30 kHz & decending by 3dB / octive up to 90 kHz									
* Fundamental limit = 93.5 dBuV/m at 10 m at from 90 kHz to 119 kHz									
* Fundamental limit = 117.5 dBuV/m at 10 m at 119 kHz & decending by 3dB / octive up to 135 kHz									
** Spurious Limit = 78.5 dBuV/m at 10 m at 9kHz & decending by 3 dB / octive									

EUT = 8 X 8 Loop w/ 5 turns and low frequency setting									
FCC / IC Requirements									
Freq	Measured	ACF	Preamp	Field Strength	Distance	Field Strength	Fundamental	Margin	Required
kHz	@ 3m	& CL	Gain		Correction 300 m to	Corrected	limit @ 300 m		Detector
	dBuV	dB	dB	dBuV/m	3	dB	dBuV/m	dB	per 15.209(d)
49.6	18.5	62.8	0	81.3	80.0	1.3	29.3	-28.0	AVG
99.4	-2.1	59	0	56.9	80.0	-23.1	23.2	-46.3	QP
148.8	-14.4	59.3	0	44.9	80.0	-35.1	19.7	-54.8	AVG
198.4	-15.9	54.4	0	38.5	80.0	-41.5	17.2	-58.7	AVG
Limit = (20 log(2400 / frequency in kHz)) in dBuV/m *** for all frrequencies below (490) kHz									
All Harmonics Levels at frequencies greater than 412 kHz are less than -15 dBuV									
SA RBW = 200 Hz for Emissions Below 150 kHz and is = 9 kHz at and above 150 kHz									
9 - 490	2400/f(kHz) in uV/m at 300 m								
490 - 1,705	24000/f(kHz) in uV/m at 30 m								
1,705 - 30,000	30 uV/m at 30m								
CE Requirements									
Freq	Measured	ACF	Preamp	Field Strength	Distance	Field Strength	Fundamental	Margin	Required
kHz	@ 3m	& CL	Gain	dBuV/m	Correction 10/3	Corrected	limit @ 10 m	dB	Detector
	dBuV	dB	dB		dB	dBuV/m			
* 49.6	26.7	62.8	0	89.5	20.9	68.6	121.3	-52.7	QP
** 99.4	-2.1	59	0	56.9	20.9	36.0	68.1	-32.1	QP
** 148.8	-4.2	59.3	0	55.1	20.9	34.2	66.4	-32.2	QP
** 198.4	2.6	53.6	0	56.2	20.9	35.3	65.1	-29.8	QP
All Harmonics Levels at frequencies greater than 412 kHz are less than -5 dBuV									
SA RBW = 200 Hz for Emissions Below 150 kHz and is = 9 kHz at and above 150 kHz									
* Fundamental limit = 123.5 dBuV/m at 10 m at 30 kHz & decending by 3dB / octive up to 90 kHz									
* Fundamental limit = 93.5 dBuV/m at 10 m at from 90 kHz to 119 kHz									
* Fundamental limit = 117.5 dBuV/m at 10 m at 119 kHz & decending by 3dB / octive up to 135 kHz									
** Spurious Limit = 78.5 dBuV/m at 10 m at 9kHz & decending by 3 dB / octive									

EUT = 8 X 8 Loop w/ 5 turns and high frequency setting									
FCC / IC Requirements									
Freq	Measured	ACF	Preamp	Field Strength	Distance	Field Strength	Fundamental	Margin	Required
kHz	@ 3m	& CL	Gain		Correction 300 m to	Corrected	limit @ 300 m		Detector
	dBuV	dB	dB	dBuV/m	dB	dBuV/m	dBuV/m	dB	per 15.209(d)
61.6	18.9	61.2	0	80.1	80.0	0.1	29.3	-29.2	AVG
123.3	-6.2	59.1	0	52.9	80.0	-27.1	23.2	-50.3	AVG
184.8	-8.8	54	0	45.2	80.0	-34.8	19.7	-54.5	AVG
246.4	-12.7	54.4	0	41.7	80.0	-38.3	17.2	-55.5	AVG
Limit = (20 log(2400 / frequency in kHz)) in dBuV/m *** for all frrequencies below (490) kHz									
All Harmonics Levels at frequencies greater than 412 kHz are less than -15 dBuV									
SA RBW = 200 Hz for Emissions Below 150 kHz and is = 9 kHz at and above 150 kHz									
9 - 490	2400/f(kHz) in uV/m at 300 m								
490 - 1,705	24000/f(kHz) in uV/m at 30 m								
1,705 - 30,000	30 uV/m at 30m								
CE Requirements									
Freq	Measured	ACF	Preamp	Field Strength	Distance	Field Strength	Fundamental	Margin	Required
kHz	@ 3m	& CL	Gain	dBuV/m	Correction 10/3	Corrected	limit @ 10 m	dB	Detector
	dBuV	dB	dB		dB	dBuV/m			
* 61.6	25.8	61.2	0	87	20.9	66.1	120.5	-54.4	QP
** 123.3	2.6	59.3	0	61.9	20.9	41.0	117.5	-76.5	QP
** 184.8	-1.9	59.3	0	57.4	20.9	36.5	46.5	-10.0	QP
** 246.4	-5.3	53.6	0	48.3	20.9	27.4	46.5	-19.1	QP
All Harmonics Levels at frequencies greater than 412 kHz are less than -5 dBuV									
SA RBW = 200 Hz for Emissions Below 150 kHz and is = 9 kHz at and above 150 kHz									
* Fundamental limit = 123.5 dBuV/m at 10 m at 30 kHz & decending by 3dB / octive up to 90 kHz									
* Fundamental limit = 93.5 dBuV/m at 10 m at from 90 kHz to 119 kHz									
* Fundamental limit = 117.5 dBuV/m at 10 m at 119 kHz & decending by 3dB / octive up to 135 kHz									
** Spurious Limit = 78.5 dBuV/m at 10 m at 9kHz & decending by 3 dB / octive									

PRODUCT EMISSIONS

PSE OPEN AREA TEST SITE

Data File: SABRE SA58P&SL58P 22MAR12 CIS-B

No	EMISSION	SPEC	MEASUREMENTS			SITE			CORR	COMMENTS
	FREQUENCY MHz	LIMIT dBuV/m	ABS	dLIM dB	MODE	POL	HGT cm	AZM deg	FACTOR dB	
1	30.210	30.0	27.7	-2.3	PK	V	100	270	-16.2	
2	30.650	30.0	28.0	-2.0	PK	V	100	1	-16.3	
3	36.033	30.0	20.2	-9.9	PK	V	100	180	-17.3	
4	60.004	30.0	26.3	-3.7	PK	H	200	45	-18.1	
5	137.239	30.0	24.8	-5.2	PK	V	150	90	-14.9	
6	149.985	30.0	22.2	-7.8	PK	H	200	45	-13.5	
7	224.43	30.0	24.2	-5.8	PK	H	200	1	-15.	
8	300.004	37.0	33.3	-3.7	PK	V	100	45	-10.7	
9	320.002	37.0	26.8	-10.2	PK	V	100	315	-10.9	
10	667.748	37.0	29.2	-7.8	PK	V	100	45	-5.8	
11	747.816	37.0	29.3	-7.7	PK	V	100	270	-4.6	

APPENDIX

B

System Under Test Description

SYSTEM

Model SL58-P inductive loop sensor card fitted into an ADR Sabre host unit in Slot 2.
Host Slot 1 contains an 8-Channel Piezo Sensor Option Card (Model SA58-P)

NOTE : Everything housed in a wood frame housing with components positioned in the same orientation as product's metal housing so that test results will be applicable for a metal or plastic housing.

Host CPC Connector 1 : (RS232/External Power) – No Connection

Host CPC Connector 2 : (Closed Contact Inputs) – No Connection

Host CPC Connector 3 : (**SL58-P Loop Inputs**) – Loop input 1 connected to test loop antenna

Host CPC Connector 4 : (SA58-P Piezo Inputs) – No Connection

USB Host Service Port : No Connection

USB Device Service Port : No Connection

Test loop antennas used:

'Small-Size' 4ft x 4ft 4turns 14AWG

'Mid-Size' 6ft x 6ft 4turns 14AWG

'Large-Size' 8ft x 8ft 5turns 14AWG

APPENDIX

C

Measurement Protocol

ANSCI C63.4 2003 was the guiding document for test procedures as required by 47 CFR Part 15 Subpart A Section 15.31(a)(3).

The EUT was powered with an internal battery during the collection of data included within.

The data is compared to the FCC Part 15 Class B limits.

The "EMI" instrumentation is capable of calculating the final emission level based on the following formula:

Level at the receiver (dB μ V) + Antenna Correction Factor (dB/M) + Cable Loss (dB) - Preamp Gain (dB) = Actual Level in dB μ V/M.

The sample calculation below is based on the actual test data collected:

Observed Level		39.3	dB μ V	
ACF	+	13.6	dB/M	
Cable Loss	+	1.1	dB	
Preamp Gain	-	<u>26.0</u>	dB	
Actual Level		28.0	dB μ V/M	@ 30.6 MHz

Please have a company official review this report and sign.
