

EMC Test Report

Project Number: 2733706

Report Number: 2733706EMC03 **Revision Level:** 0

Client: Sonim Technologies Inc.

Equipment Under Test: Cellular/PCS CDMA/EvDO Phone with Bluetooth

Marketing Name: Sonim XP Strike

Model: Sonim XP3410-A-R1 (C21F010AA)

Hardware Version: A

Applicable Standards: FCC Part 15 Subpart B

ANSI C63.4: 2009

Report issued on: 20 SEP 2012


Test Result: Compliant

Tested by:



Fabian Nica, Engineering Technician

Reviewed by:



David Schramm, EMC Manager

Remarks:

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or Testing done by SGS International Electrical Approvals in connection with distribution or use of the product described in this report must be approved by SGS international Electrical Approvals in writing.

Table of Contents

1	SUMMARY OF TEST RESULTS.....	3
1.1	MODIFICATIONS REQUIRED FOR COMPLIANCE	3
2	GENERAL INFORMATION	3
2.1	CLIENT INFORMATION	3
2.2	TEST LABORATORY	3
2.3	GENERAL INFORMATION OF EUT	3
2.4	EUT CONNECTION BLOCK DIAGRAM	4
2.5	SYSTEM CONFIGURATIONS.....	5
2.6	CABLE LIST.....	5
3	RADIATED EMISSIONS.....	6
3.1	TEST RESULT	6
3.2	TEST METHOD.....	6
3.3	TEST SITE.....	7
3.4	TEST EQUIPMENT	7
3.5	TEST DATA	7
4	CONDUCTED EMISSIONS.....	10
4.1	TEST RESULT	10
4.2	TEST METHOD.....	10
4.3	TEST SITE.....	10
4.4	TEST EQUIPMENT	10
4.5	TEST SETUP PHOTOGRAPHS	10
4.6	TEST DATA	11
5	REVISION HISTORY	13

1 Summary of Test Results

Test Description	Test Specification	Test Result
Radiated Spurious Emissions	15.107, Class B	Compliant
Conducted Spurious Emissions	15.109, Class B	Compliant

1.1 *Modifications Required for Compliance*

None

2 General Information

2.1 *Client Information*

Name: Sonim Technologies Inc.
 Address: 1875 S. Grant Street, Suite 200
 City, State, Zip, Country: San Mateo, CA 94402, USA

2.2 *Test Laboratory*

Name: SGS North America, Inc.
 Address: 620 Old Peachtree Road NW, Suite 100
 City, State, Zip, Country: Suwanee, GA 30024, USA

2.3 *General Information of EUT*

Marketing Name: Sonim XP Strike
 Model: Sonim XP3410-A-R1 (C21F010AA)
 Serial Number: Radiated: A1000012926881, Conducted: A1000012926680
 Build Version: B2.5
 Firmware Version: XP3410_0200B00_0150T
 FCC ID: WYPC21F010AA

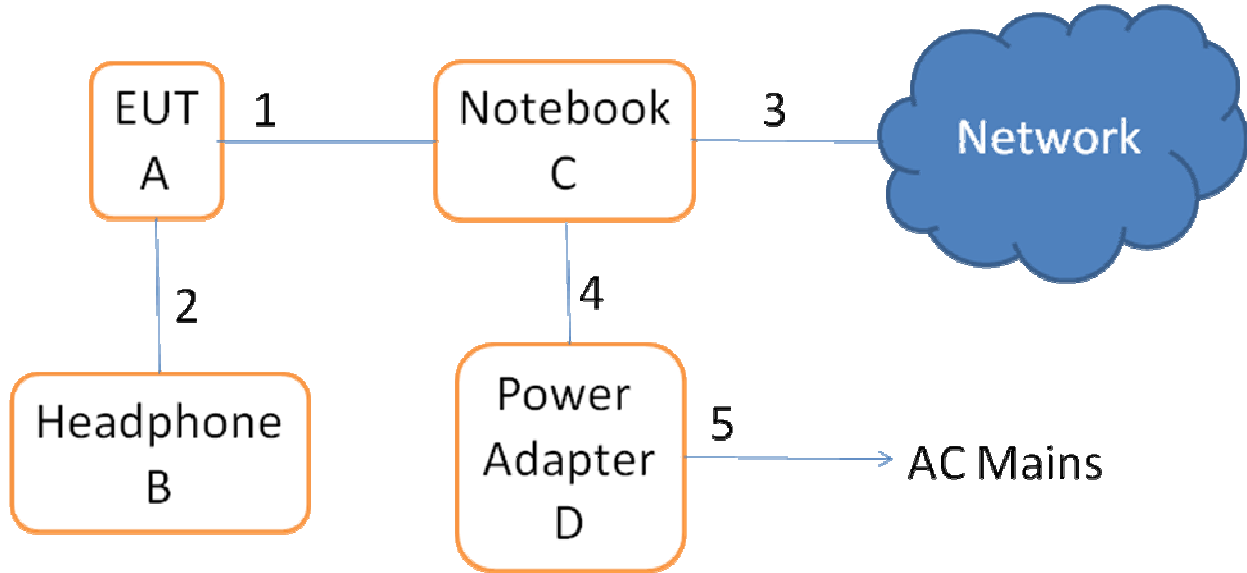
Rated Voltage: 3.8 VDC Internal Battery

Sample Received Date: 20 July 2012
 Dates of testing: 20 - 29 August 2012

Operating Modes and Conditions

The EUT was configured with a memory card and connected to the notebook pc. Commands were given on the notebook to write/read/erase data files continuously in order to exercise the data transfer function of the EUT.

2.4 EUT Connection Block Diagram



2.5 System Configurations

Device reference	Manufacturer	Description	Model Number	Serial Number
A	Sonim	EUT	Sonim XP3410-A-R1 (C21F010AA)	A1000012926881
B	Sonim	Stereo Headphones / Microphone	Not labeled	Not labeled
C	Lenovo	ThinkPad	T61	L3-A9061
D	Lenovo	Power Adapter	92P1105	11S92P11105Z1ZBW971VA7R

2.6 Cable List

Cable reference	Port Name	Start	End	Cable Length (m)	Ferrite installed?	Shielded?
1	USB	EUT	Lenovo ThinkPad	1.1	No	Yes
2	Headphone	EUT	Stereo Headphones / Microphone	1.6	No	No
3	Ethernet	Notebook	LAN	18	No	No
4	Power Input	Notebook	Power Adapter	1.85	Yes	Yes
5	AC Power	Power Adapter	AC Mains	1	No	No

3 Radiated Emissions

3.1 Test Result

Test Description	Basic Standards	Test Result
Radiated Emissions, Class A	FCC Part 15, Subpart B ANSI C63.4:2009	Compliant

3.2 Test Method

The initial preliminary exploratory scans were performed over the frequency range as indicated in the tables below using the max hold function and incorporating a Peak detector and using TILE! software. The final test data was measured using a Quasi-Peak detector below 1GHz and a Peak and Average detector above 1GHz. The receivers resolution bandwidth was set to 120 kHz for measurements taken in the 30MHz to 1GHz frequency range and 1MHz for measurements for 1GHZ and higher. Measurements were made with the antenna positioned in both the horizontal and vertical planes of polarization. The antenna height was varied from 1 m to 4 m and the EUT was rotated 360° to find the maximum emitting point for each frequency. The radiated measurements were recorded and compared to the limits indicated in the table below.

Radiated emissions limit below 1 GHz

Frequency Range	Limits (dBuV/m) Quasi-Peak		Equipment Classification
	3 m	10 m	
30 to 230 MHz	40.5	30	Class B
230 to 1000 MHz	47.5	37	

Frequency Range	Limits (dBuV/m) Quasi-Peak		Equipment Classification
	3 m	10 m	
30 to 230 MHz	50.5	40	Class A
230 to 1000 MHz	57.5	47	

Radiated emissions limit above 1 GHz

Frequency Range	Class A Limits (dBuV/m)		Class B Limits (dBuV/m)	
	FCC	CISPR	FCC	CISPR
1 to 3 GHz	Avg 60 Pk 80	Avg 56 Pk 76	Avg 54 Pk 74	Avg 50 Pk 70
3 to 6 GHz	Avg 60 Pk 80	Avg 60 Pk 80	Avg 54 Pk 74	Avg 54 Pk 74
6 to 40 GHz	Avg 60 Pk 80	No requirement	Avg 54 Pk 74	No requirement

3.3 Test Site

3m Absorber Lined Shielded Enclosure (ALSE), Suwanee, GA

Environmental Conditions

Temperature: 24.3 °C
 Relative Humidity: 49.1 %
 Atmospheric Pressure: 978.4 kPa

3.4 Test Equipment

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
Bilog Antenna	CBL 6143A	Teseq	B085931	7 Oct 2012
DRWG Antenna	3117	ETS-Lindgren	B079691	31 May 2013
Receiver	ESU8	R & S	B085759	12 June 2013
Pre-Amplifier	NSP1800-25-HG	Miteq	B085930	14 Oct 2012
Coaxial Cable	Sucoflex 106	Huber+Suhner	B079713	13 Aug 2013
Coaxial Cable	Sucoflex 106	Huber+Suhner	B079661	13 Aug 2013
Coaxial Cable	Sucoflex 106	Huber+Suhner	B085888	26 Sep 2012

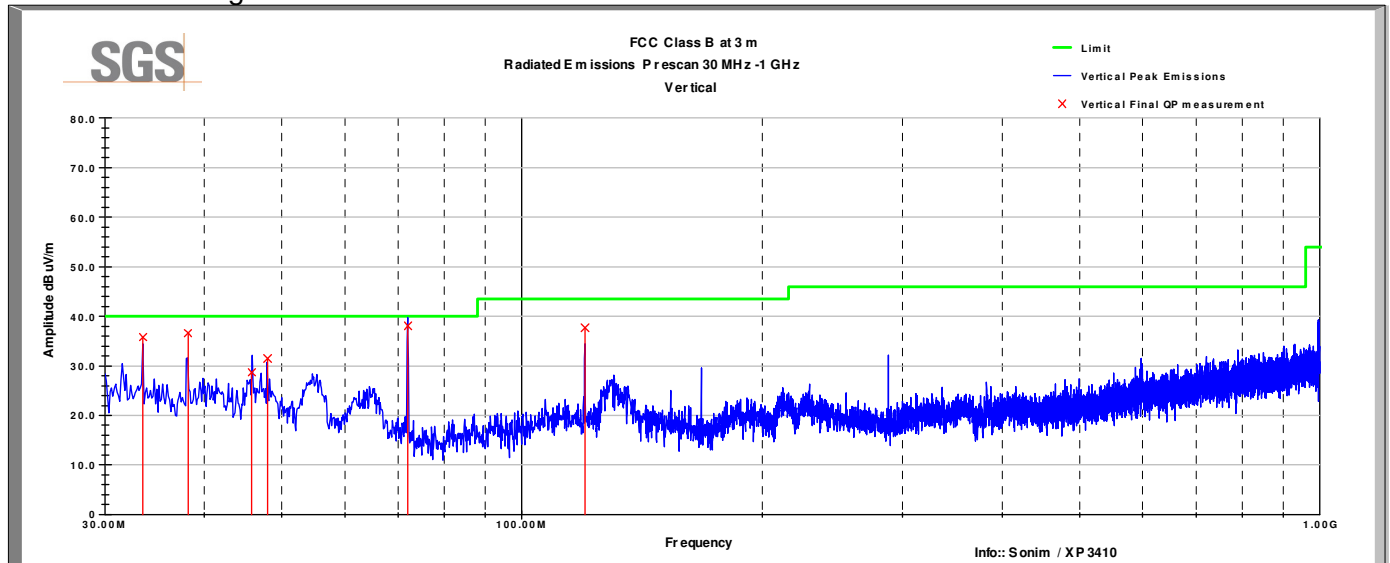
Note: The calibration period equipment is 1 year.

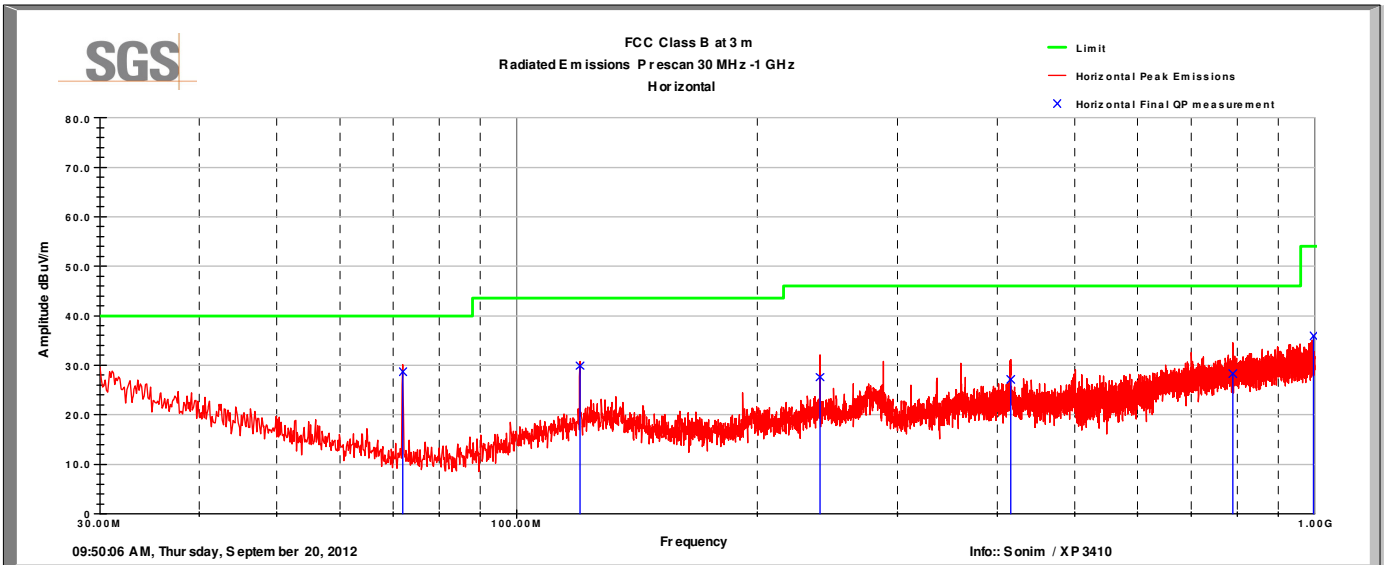
Software:

“Radiated Emissions” TILE! profile dated 15 Oct 2011

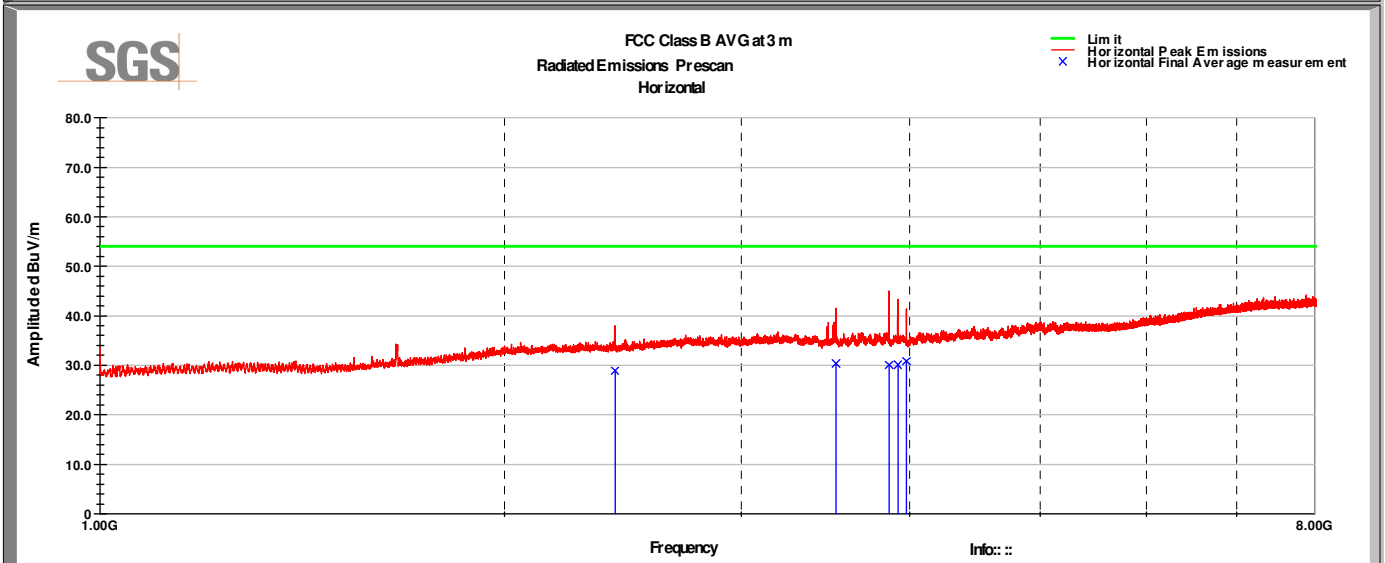
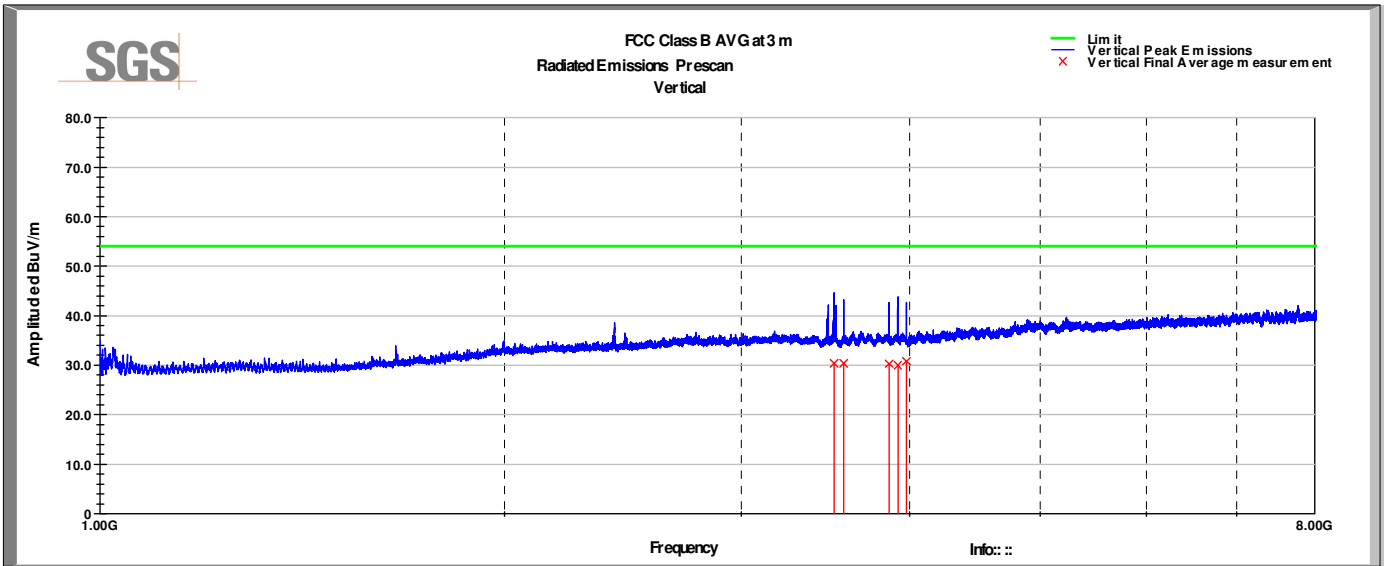
3.5 Test Data

Test Date: 29 Aug 2012





Frequency MHz	Raw QP dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	CL (dB)	Amp (dB)	QP Value (dBuV/m)	Limit (dBuV/m)	Margin (dB)
72.00	29.1	V	217.4	100.0	8.3	0.7	0.0	38.1	40.0	-1.9
33.52	13.0	V	327.4	100.0	22.2	0.6	0.0	35.8	40.0	-4.2
38.15	16.6	V	331.9	100.0	19.4	0.6	0.0	36.6	40.0	-3.4
45.88	12.0	V	50.6	100.0	16.1	0.6	0.0	28.7	40.0	-11.3
48.00	16.1	V	18.4	100.0	14.8	0.6	0.0	31.5	40.0	-8.5
120.00	23.3	V	360.0	100.0	13.4	1.0	0.0	37.7	43.5	-5.8
72.00	19.7	H	311.3	100.0	8.3	0.7	0.0	28.7	40.0	-11.3
120.00	15.5	H	91.9	100.0	13.4	1.0	0.0	29.9	43.5	-13.6
240.00	13.3	H	0.0	346.3	13.0	1.3	0.0	27.6	46.0	-18.4
416.00	8.0	H	206.0	235.5	17.3	1.8	0.0	27.1	46.0	-18.9
790.00	4.5	H	345.0	100.0	21.3	2.5	0.0	28.3	46.0	-17.7
997.50	10.3	H	209.0	231.1	22.8	2.8	0.0	35.9	54.0	-18.1
QP Value = Level + AF + CL - Amp										
Margin = QP Value - Limit										
Notes:										
72 MHz traces to noise on Ethernet cable unrelated to EUT										



Frequency MHz	Raw Avg dBuV	Polarity (V/H)	Azimuth (degrees)	Height (cm)	AF (dB/m)	CL (dB)	Amp (dB)	Avg Value dBuV/m	Limit (dBuV/m)	Margin (dB)
3513.96	37.2	V	224.0	128.0	33.0	4.4	44.3	30.3	54.0	-23.7
2415.25	37.1	H	359.0	214.0	32.3	3.6	44.1	28.9	54.0	-25.1
3526.20	37.1	H	332.0	256.0	33.1	4.4	44.3	30.3	54.0	-23.7
3573.12	37.0	V	332.0	367.0	33.2	4.5	44.3	30.3	54.0	-23.7
3862.46	36.2	V	359.0	177.0	33.6	4.7	44.2	30.3	54.0	-23.7
3862.80	36.0	H	181.0	400.0	33.6	4.7	44.2	30.0	54.0	-24.0
3919.92	35.9	V	190.0	100.0	33.5	4.7	44.2	30.0	54.0	-24.0
3920.18	36.1	H	336.0	400.0	33.5	4.7	44.2	30.1	54.0	-23.9
3977.38	36.8	V	289.0	100.0	33.5	4.7	44.3	30.8	54.0	-23.2
3977.55	36.8	H	336.0	400.0	33.5	4.7	44.3	30.8	54.0	-23.2
Avg Value = Level + AF + CL - Amp										
Margin = Avg Value - Limit										

4 Conducted Emissions

4.1 Test Result

Test Description	Basic Standards	Test Result
Conducted Emissions Class A	FCC Part 15, Subpart B ANSI C63.4:2009	Compliant

4.2 Test Method

With the receivers resolution bandwidth was set to 9 kHz the initial preliminary exploratory scans were performed over the measuring frequency range (0.15MHz to 30MHz) using a max hold mode incorporating a Peak detector and Average detector and using the TILE! software. The final test data was measured using a Quasi-Peak detector and Average detector and compared against the limits indicated in the table below.

Frequency Range	Class A Limits (dBuV)		Class B Limits (dBuV)	
	FCC	CISPR	FCC	CISPR
0.15 to 0.5 MHz	Avg 66 QP 79		Avg 56 to 46 QP 66 to 56	
0.5 to 5 MHz	Avg 60 QP 73		Avg 46 Pk 56	
5 to 30 MHz	Avg 60 QP 73		Avg 50 Pk 60	

4.3 Test Site

SGS EMC Laboratory, Suwanee, GA

Environmental Conditions

Temperature: 24.5 °C

Relative Humidity: 49.0 %

Atmospheric Pressure: 978.4 kPa

4.4 Test Equipment

Equipment	Model	Manufacturer	Asset Number	Cal Due Date
LISN	NNB51	TESEQ	B085882	6 Oct 2012
Receiver	ESU8	R & S	B085759	12 June 2013

Note: The calibration period equipment is 1 year.

Software:

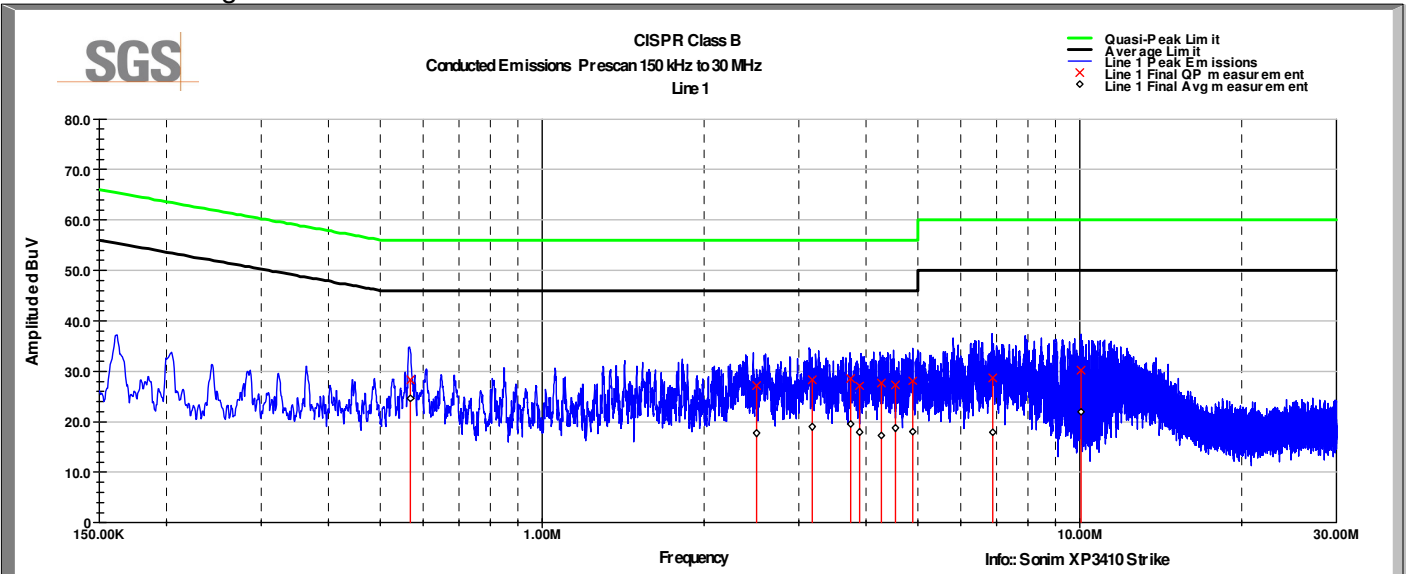
“Conducted Emissions” TILE! profile dated 10 Nov 2011

4.5 Test Setup Photographs

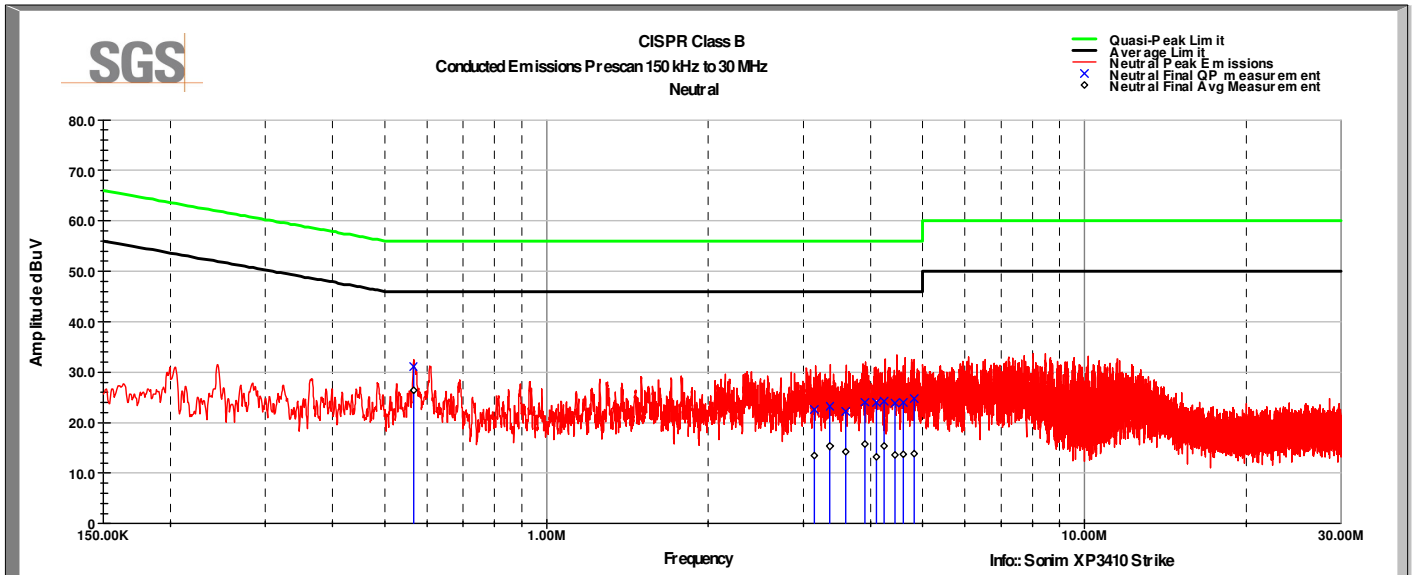
Test setup photographs are located in a separate exhibit.

4.6 Test Data

Test Date: 20 Aug 2012



Frequency MHz	QP Value dBuV	QP Limit dBuV	Margin dB	Avg Value dBuV	Avg Limit dBuV	Avg Margin dB
0.569	28.3	56.0	-27.7	24.7	46.0	-21.3
2.504	27.2	56.0	-28.8	17.7	46.0	-28.3
3.178	28.3	56.0	-27.7	19.0	46.0	-27.0
3.744	28.6	56.0	-27.4	19.5	46.0	-26.5
3.893	27.1	56.0	-28.9	18.0	46.0	-28.0
4.277	27.7	56.0	-28.3	17.3	46.0	-28.7
4.540	27.3	56.0	-28.7	18.7	46.0	-27.3
4.886	28.1	56.0	-27.9	18.0	46.0	-28.0
6.881	28.7	60.0	-31.3	17.9	50.0	-32.1
10.057	30.2	60.0	-29.8	22.0	50.0	-28.0



Frequency MHz	QP Value dBuV	QP Limit dBuV	QP Margin dB	Avg Value dBuV	Avg Limit dBuV	Avg Margin dB
0.566	31.1	56.0	-24.9	26.4	46.0	-19.6
3.148	22.6	56.0	-33.4	13.5	46.0	-32.5
3.365	23.2	56.0	-32.8	15.3	46.0	-30.7
3.603	22.3	56.0	-33.7	14.2	46.0	-31.8
3.906	24.0	56.0	-32.0	15.7	46.0	-30.3
4.108	24.0	56.0	-32.0	13.2	46.0	-32.8
4.239	24.2	56.0	-31.8	15.4	46.0	-30.6
4.447	23.9	56.0	-32.1	13.6	46.0	-32.4
4.602	23.9	56.0	-32.1	13.7	46.0	-32.3
4.825	24.8	56.0	-31.2	13.8	46.0	-32.2

5 Revision History

Revision Level	Description of changes	Revision Date
0	Initial release	20 Sep 2012