Lab Code: 200167-0

FCC PART 15.247
IC RSS-210, ISSUE 7, JUNE 2007
TEST AND MEASUREMENT REPORT

For

Trimble Navigation Limited

935 Stewart Drive,
Sunnyvale, CA 94085, USA

FCC ID: JUP-6734890
IC: 1756A-6734890
Model: SPSx52

Report Type:	**Product Type:**
Original Report	GPS Receiver with Bluetooth and optional 900 MHz

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Report Number:	R1002232-247
Report Date:	2010-04-15
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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	R1002232-247	Original Report	2010-04-15

1 GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

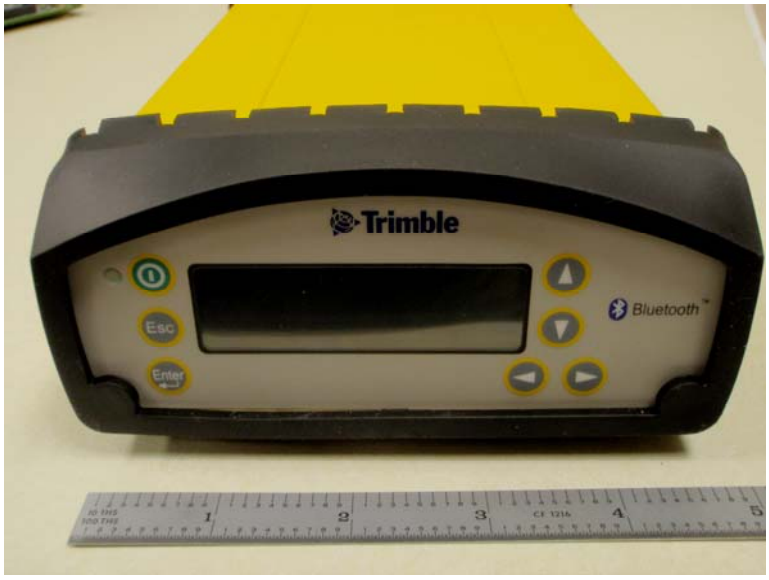
This test and measurement report was prepared on behalf of *Trimble Navigation Limited* and their product model: *SPSx52,* or the "EUT," as it is referred to in this report. The EUT is a GPS receiver for construction with Bluetooth radio and optional 900MHz radio.

1.2 Mechanical Description of EUT

The EUT measures approximately 25cm L x 13cm W x 6cm H and weights 2kgs.

**The data gathered are from a production sample provided by the manufacturer, serial number: 5006K65578, part number: 67348-90*

1.3 EUT Photograph



Please refer to Exhibit C for more EUT photographs.

1.4 Objective

This type approval report is prepared on behalf of *Trimble Navigation Limited* in accordance with Part 2, Subpart J, Part 15, Subparts A, B, and C and IC RSS-210.

Previous Conducted data can be shared from FCC ID: JUP-5855590 because no changes have been made to the radio module the only difference is the host.

1.5 Related Submittal(s)/Grant(s)

FCC ID: JUP-5855590; IC: 1756A-5855590, Report #: R0805277

1.6 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI C63.4-2003.

1.7 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the values range from $\pm$2.0 for Conducted Emissions tests and $\pm$4.0 dB for Radiated Emissions tests are the most accurate estimates pertaining to uncertainty of EMC measurements at BACL.

Detailed instrumentation measurement uncertainties can be found in BACL report QAP-018.

1.8 Test Facility

The semi-anechoic chambers used by BACL to collect radiated and conducted emissions measurement data is located in the building at it's facility in Sunnyvale, California, USA.

BACL's test sites have been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC registration number: 90464 and VCCI Registration No.: C-2698 and R-2463. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations can be found at http://ts.nist.gov/ts/htdocs/210/214/scopes/2001670.htm

2 SYSTEM TEST CONFIGURATION

2.1 Justification

The system was configured for testing in accordance with ANSI C63.4-2003.
The EUT was tested in the testing mode to represent *worst*-case results during the final qualification test.

2.2 EUT Exercise Software

The software is provided by customer. The EUT was pinging to a laptop PC through Ethernet, had a web browser open, updating via RSS232 (serial) cable.

2.3 Special Accessories

N/A.

2.4 Equipment Modifications

No modifications were made to the EUT.

2.5 Local Support Equipment

Manufacturers	Descriptions	Models	Serial Numbers
Dell	Laptop	D610	8273581345

2.6 EUT Internal Configuration

Manufacturers	Descriptions	Models	Serial Numbers
Trimble	GPS Receiver	SPSx52	5006K65576
-	AC/DC Power Supply	Delta ADP-65JH AB	B15W0190016
-	GNSS Antenna	Zephyr 2	3032427

2.7 Interface Ports and Cabling

Cable Description	Length (m)	From	To	
TNC RF	1	EUT	GPS Antenna	
Ethernet	2	EUT	Laptop	
Serial	2	EUT	Laptop	
DC power and data cable	2	EUT	Laptop (data)	AC/DC Adaptor (DC power)

3 SUMMARY OF TEST RESULTS

FCC 15C & IC RSS-210 Rules	Description of Test	Results
FCC §15.203 IC RSS-Gen §7.1.4	Antenna Requirements	*
FCC §15.207 (a) IC RSS-Gen §7.2.2	Conducted Emissions	*
FCC §15.205, §15.209 & §15.247(d) IC RSS-210 §2.2, §A8.5	Restricted Band and Unwanted Emissions	Compliant
FCC §2.1051 & 15.247(d) IC RSS-210 §A8.5 & RSS-Gen §7.2	Spurious Emissions at Antenna Port	*
FCC§15.247 (a)(1) IC RSS-210 §A8.1 (a)	20 dB Bandwidth & 99% Bandwidth	*
FCC§15.247 (a)(1) IC RSS-210 §A8.1(d)	Hopping Channel Separation	*
FCC§15.247 (a)(1)(iii) IC RSS-210 §A8.1(d)	Number of Hopping Frequencies Used	*
FCC§15.247 (a)(1)(iii) IC RSS-210 §A8.1(d)	Dwell Time	*
FCC§15.247 (b)(3) IC RSS-210 §A8.4(b)	Maximum Peak Output Power	*
FCC§ 15.247 (d) IC RSS-210 §A8.5	100 kHz Bandwidth of Frequency Band Edge	*
IC RSS-Gen §4.10	Receiver Spurious Emissions	Compliant
FCC §15.247(i) & §2.1091 IC RSS-Gen §5.5 & RSS-102	RF Exposure	Compliant

Note: * Refer to FCC ID: JUP-5855590 IC: 1756A-58555590, report number: R0805277

4 FCC §15.205, §15.209, §15.247(D) & IC RSS-210 §2.2, §A8.5 – Restrict Band and Unwanted Emissions

4.1 Applicable Standard:

As per FCC §15.205 and IC RSS-210 §2.2, Restricted bands of operation

(a) Except as shown in FCC §15.205 paragraphs (d), only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	MHz	MHz	GHz	GHz
0.090 – 0.110	8.291 – 8.294	16.69475 – 16.69525	156.7 – 156.9	1435 – 1626.5	3.332 – 3.339	10.6 – 12.7
0.495 – 0.505	8.362 – 8.366	25.5 – 25.67	162.0125 –167.17	1645.5 – 1646.5	3.3458 – 3.358	13.25 – 13.4
2.1735 – 2.1905	8.37625 – 8.38675	37.5 – 38.25	167.72 – 173.2	1660 – 1710	3.600 – 4.400	14.47 – 14.5
4.125 – 4.128	8.41425 – 8.41475	73 – 74.6	240 – 285	1718.8 – 1722.2	4.5 – 5.15	15.35 – 16.2
4.17725 – 4.17775	12.29 – 12.293	74.8 – 75.2	322 – 335.4	2200 – 2300	5.35 – 5.46	17.7 – 21.4
4.20725 – 4.20775	12.51975 – 12.52025	108 – 121.94	399.9 – 410	2310 – 2390	7.25 – 7.75	22.01 – 23.12
6.215 – 6.218	12.57675 – 12.57725	123 – 138	608 – 614	2483.5 – 2500	8.025 – 8.5	23.6 – 24.0
6.26775 – 6.26825	13.36 – 13.41	149.9 – 150.05	960 – 1240	2690 – 2900	9.0 – 9.2	31.2 – 31.8
6.31175 – 6.31225	16.42 – 16.423	156.52475 – 156.52525	1300 – 1427	3260 – 3267	9.3 – 9.5	36.43 – 36.5
						Above 38.6

(b) Except as provided in 15.205 paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

(c) Except as provided in paragraphs (d) and (e), regardless of the field strength limits specified elsewhere in this Subpart, the provisions of this Section apply to emissions from any intentional radiator.

As per FCC §15.209 Radiated emission limits, general requirements.

(a) 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 (microvolts/meter)	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

*** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.*

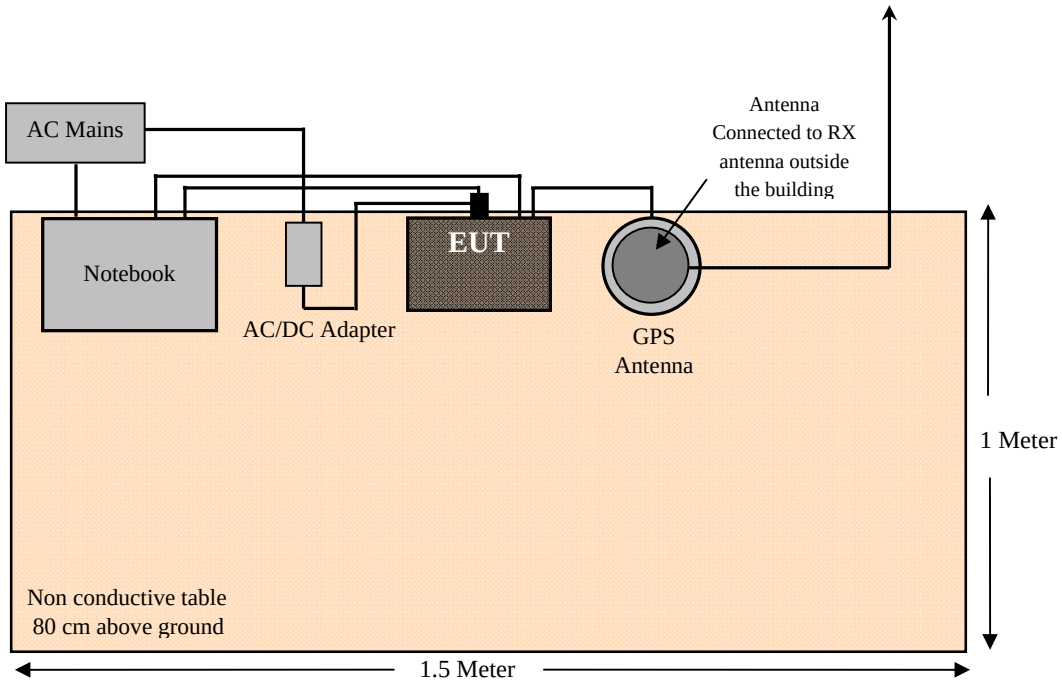
According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emissions limits specified in §15.209(a) see §15.205(c)).

IC RSS-210 §A8.5, 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.

4.2 Test Setup

The radiated emissions tests were performed in the 3-meter semi-anechoic chamber test site, using the setup in accordance with ANSI C63.4-2003. The specification used was the FCC 15C & IC RSS-210 limits.

4.3 Test Setup Diagram



4.4 Test Procedure

For the radiated emissions test, the EUT, and all support equipment power cords was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The EUT is set 3 meter away from the testing antenna, which is varied from 1-4 mete, and the EUT is placed on a turntable, which is 0.8 meter above ground plane, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

The spectrum analyzer or receiver is set as:

Below 1000 MHz:

RBW = 100 kHz/VBW = 300 kHz/Sweep = Auto

Above 1000 MHz:

Peak: RBW = 1MHz/VBW = 1MHz/Sweep = Auto
Average: RBW = 1MHz/VBW = 10Hz/Sweep = Auto

4.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Cable Loss, and Attenuator Factor adding to the Indicated Reading. The basic equation is as follows:

Corrected Amplitude = Indicated Reading + Cable Loss + Attenuator Factor

For example, a Corrected Amplitude of 34.08 dBuV/m = Indicated Reading (23.85 dBuV) + Cable Factor (0.22 dB) + Attenuator Factor (10 dB)

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the maximum limit.

4.6 Test Equipment List and Details

Manufacturer	Description	Model No.	Serial Number	Calibration Date
Hewlett Packard	Pre amplifier	8447D	2944A06639	2009-06-05
HP	Pre Amplifier	8449B	3147A00400	2010-02-01
Sunol Science Corp	Combination Antenna	JB3	A0020106-3	2009-05-05
A.R.A Inc	Horn antenna	DRG-1181A	1132	2009-10-27
Agilent	PSA Series Spectrum Analyzer	E4440A	MY44303352	2009-04-27
A.H Systems	Antenna, Horn	SAS-200/571	261	2009-09-23

*** Statement of Traceability:** BACL attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

4.7 Test Environmental Conditions

Temperature:	15~18 ºC
Relative Humidity:	44~50 %
ATM Pressure:	101.2~102.3kPa

**Testing was performed by Vang Her on 2010-02-25 in chamber 3.*

4.8 Summary of Test Results

According to the data hereinafter, the EUT complied with the FCC Part 15C & IC RSS-210 emissions limits, and had the worst margin of:

30-1000 MHz:

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-19.71	30.53276	Vertical	Low, 30-1000 MHz
*	-	-	Middle, 30-1000 MHz
*	-	-	High, 30-1000 MHz

Note: * All emission levels are at the noise floor and/or more than 20 dB below the limit.

Above 1 GHz:

Mode: Transmitting			
Margin (dB)	**Frequency (MHz)**	**Polarization (Horizontal/Vertical)**	**Channel, Range**
-4.65	1805.24	Vertical	Low, 1-25 GHz
*	-	-	Mid, 1-25 GHz
*	-	-	High, 1-25 GHz

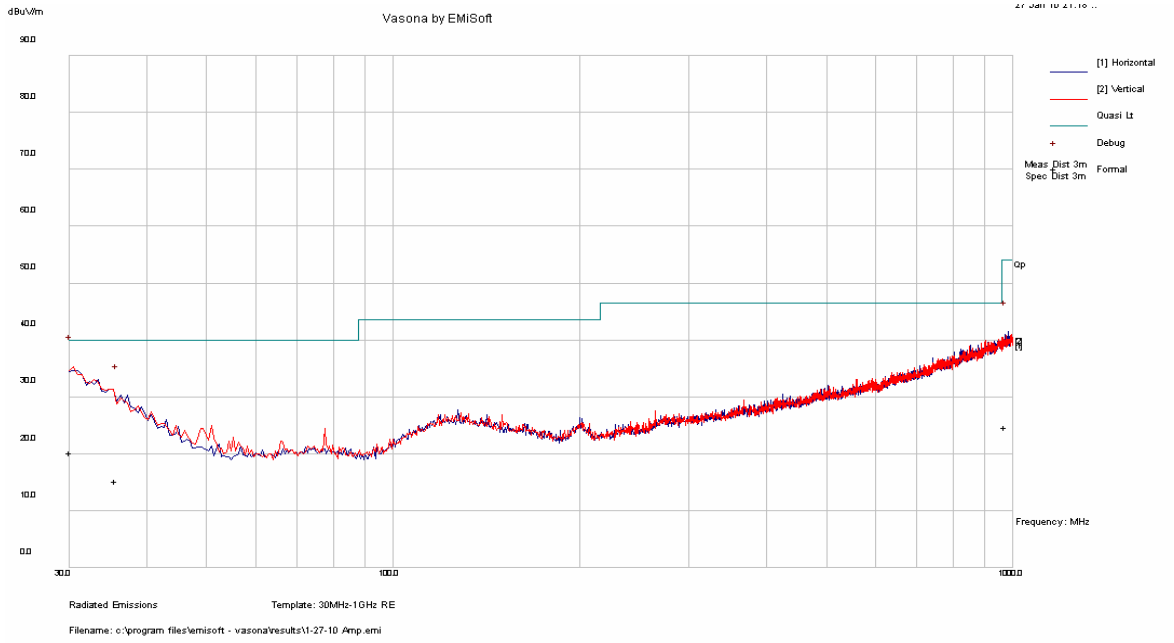
**Note: ***All emission levels are at the noise floor and/or more then 20 dB below the limit.

Please refer to the following table and plots for specific test result details

4.9 Radiated Emissions Test Result Data:

30 MHz – 1 GHz:

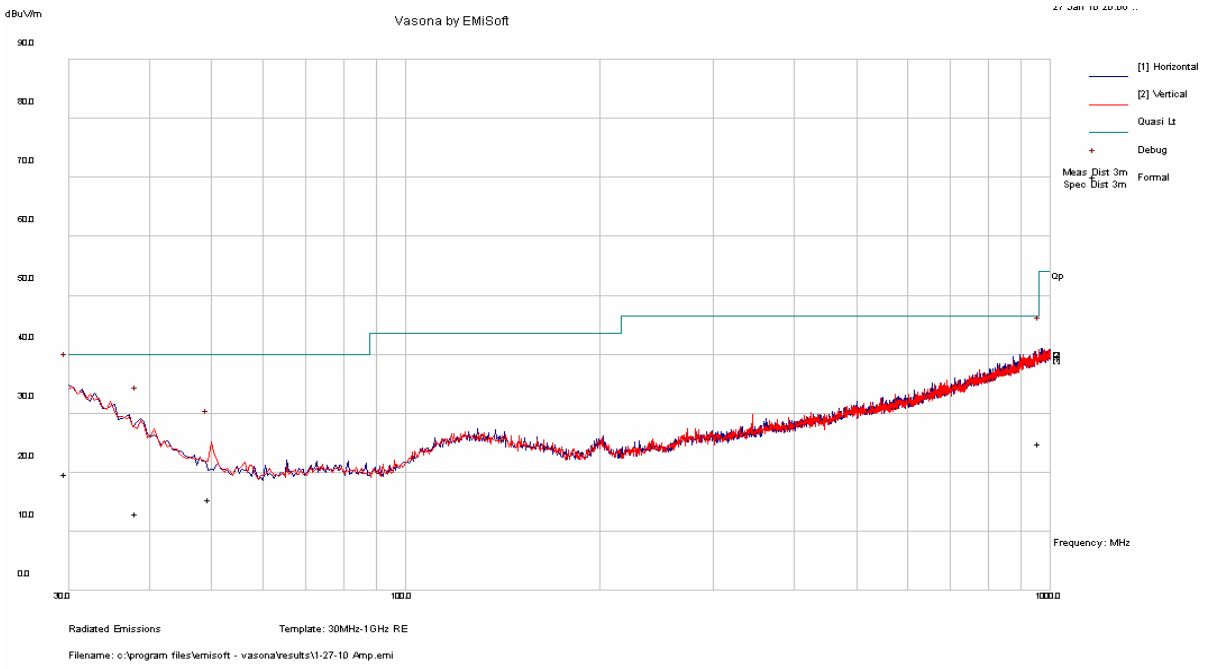
Low Channel (902.621MHz) @ Measured at 3 meter



Quasi-Peak Measurement

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
30.53276	20.29	213	V	262	40	-19.71
36.11252	15.13	351	H	42	40	-24.87
982.70180	24.75	146	H	264	54	-29.25

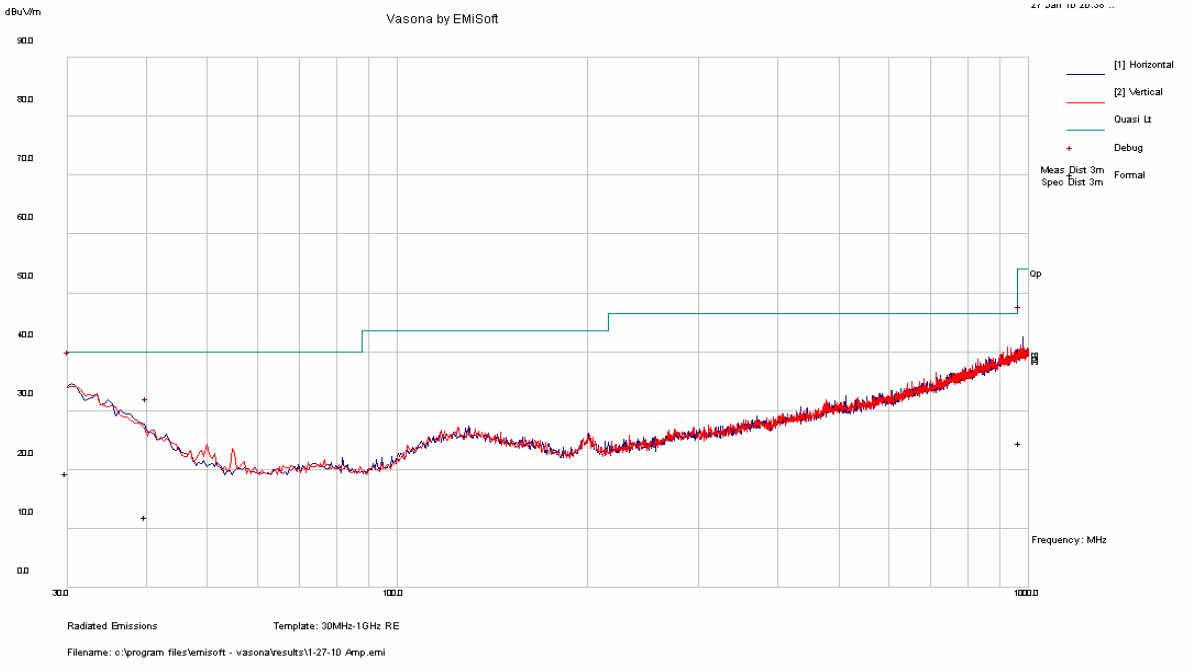
Middle Channel (914.850 MHz) @ Measured at 3 meter



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
30.00000	19.76	97	H	258	40	-20.24
50.11324	15.31	116	V	70	40	-24.69
38.69112	13.05	321	H	0	40	-26.95
970.86090	24.87	276	H	200	54	-29.13

High Channel (927.588 MHz) @ Measured at 3 meter



Quasi-Peak Measurements

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
30.28388	19.28	312	H	110	40	-20.72
40.49264	12.01	231	V	274	40	-27.99
980.2864	24.55	383	H	128	54	-29.45

1 – 25 GHz Measurements:

Low Channel 902.621 MHz, measured at 3 meters

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC & IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
1805.24	60.7	357	194	V	25.7	2.29	36.9	51.79	74	-22.21	Peak
1805.24	57.12	141	155	H	25.7	2.29	36.9	48.21	74	-25.79	Peak
1805.24	58.26	357	194	V	25.7	2.29	36.9	49.35	54	-4.65	Average
1805.24	53.9	141	155	H	25.7	2.29	36.9	44.99	54	-9.01	Average

Middle channel 914.850 MHz measured at 3 meters

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC & IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
-	-	-	-	V	-	-	-	-	-	-	*
-	-	-	-	H	-	-	-	-	-	-	*

Note: * All emission levels are at the noise floor and/or more then 20 dB below the limit.

High channel 927.588 MHz measured at 3 meters

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC & IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
-	-	-	-	V	-	-	-	-	-	-	*
-	-	-	-	H	-	-	-	-	-	-	*

Note: * All emission levels are at the noise floor and/or more then 20 dB below the limit.

Restricted Band:

Highest Channel

Frequency (MHz)	S.A. Reading (dBµV)	Azimuth (degrees)	Test Antenna			Cable Loss (dB)	Pre-Amp. (dB)	Cord. Reading (dBµV/m)	FCC & IC		Comments
			Height (cm)	Polarity (H/V)	Factor (dB/m)				Limit (dBµV/m)	Margin (dB)	
980	60.27	173	201	V	24.6	1.8	37	49.67	74	-24.33	Peak
980	57.98	227	129	H	24.6	1.8	37	47.38	74	-26.62	Peak
980	57.35	173	201	V	24.6	1.8	37	46.75	54	-7.25	Average
980	52.24	227	129	H	24.6	1.8	37	41.64	54	-12.36	Average

5 IC RSS-Gen §4.10 & RSS-210 §2.6 Receiver Spurious Emissions

5.1 Applicable Standard

IC RSS-Gen §4.10 & RSS-210 §2.6.

General Field Strength Limits for Transmitters and Receivers at Frequencies above 30 MHz

Frequency (MHz)	Field Strength microvolts/m at 3 meters (watts, e.i.r.p.)	
	Transmitters	Receivers
30 - 88	100 (3 nW)	100 (3 nW)
88 - 216	150 (6.8 nW)	150 (6.8 nW)
216 - 960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

5.2 Test Setup

The radiated emissions tests were performed in the 3 meter chamber, using the setup in accordance with ANSI C63.4-2003.

5.3 Equipment Lists and Details

Manufacturer	Description	Model No.	Serial Number	Calibration Date
Hewlett Packard	Pre amplifier	8447D	2944A06639	2009-06-05
HP	Pre Amplifier	8449B	3147A00400	2010-02-01
Sunol Science Corp	Combination Antenna	JB3	A0020106-3	2009-05-05
A.R.A Inc	Horn antenna	DRG-1181A	1132	2009-10-27
Agilent	PSA Series Spectrum Analyzer	E4440A	MY44303352	2009-04-27
A.H Systems	Antenna, Horn	SAS-200/571	261	2009-09-23

Statement of Traceability: BACL Corp. attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

5.4 Test Environmental Conditions

Temperature:	15~18 ºC
Relative Humidity:	44~50 %
ATM Pressure:	101.2~102.3kPa

**Testing was performed by Vang Her on 2010-02-25 in chamber3.*

5.5 Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations.

All data were recorded in the peak detection mode. Quasi-peak readings was performed only when an emissions was found to be marginal (within -4 dB of specification limits), and are distinguished with a "**QP**" in the data table.

5.6 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corrected Amplitude = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emissions are 7dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Corrected Amplitude - Limit

5.7 Summary of Test Results

According to the test data,, the EUT complied with the with the applicable IC Standards, with the closest margins from the limit listed below:

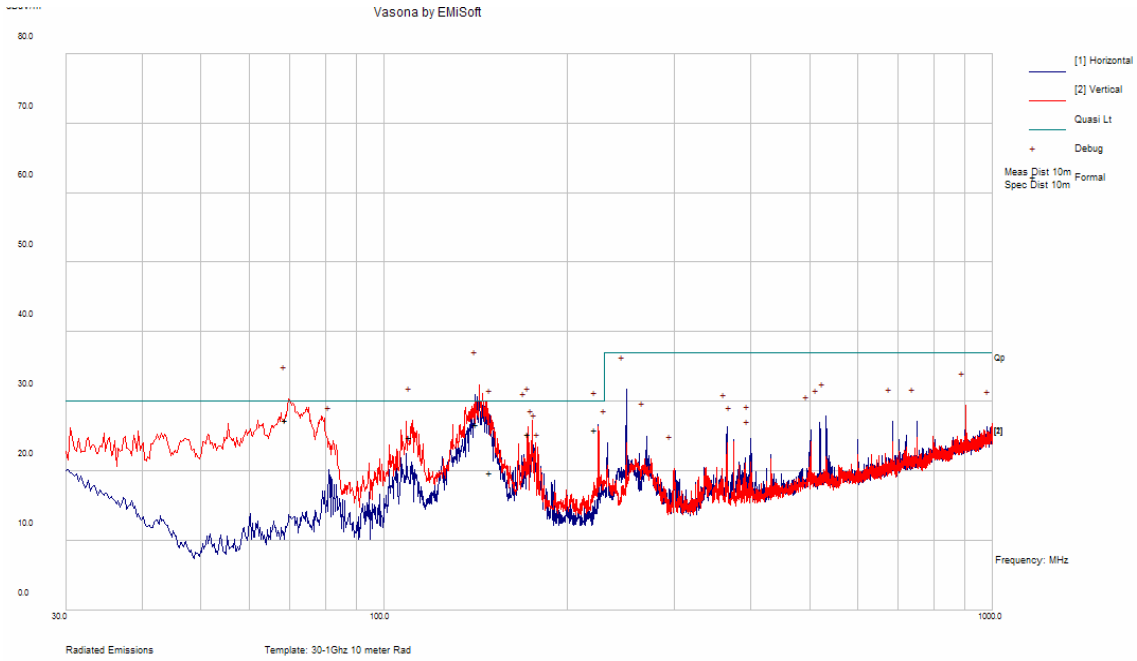
30 MHz - 1 GHz

-2.64 dB at 69.74 MHz in the Vertical Polarization

Above 1 GHz

-18.2 dB at 7149.49 MHz in the Horizontal Polarization

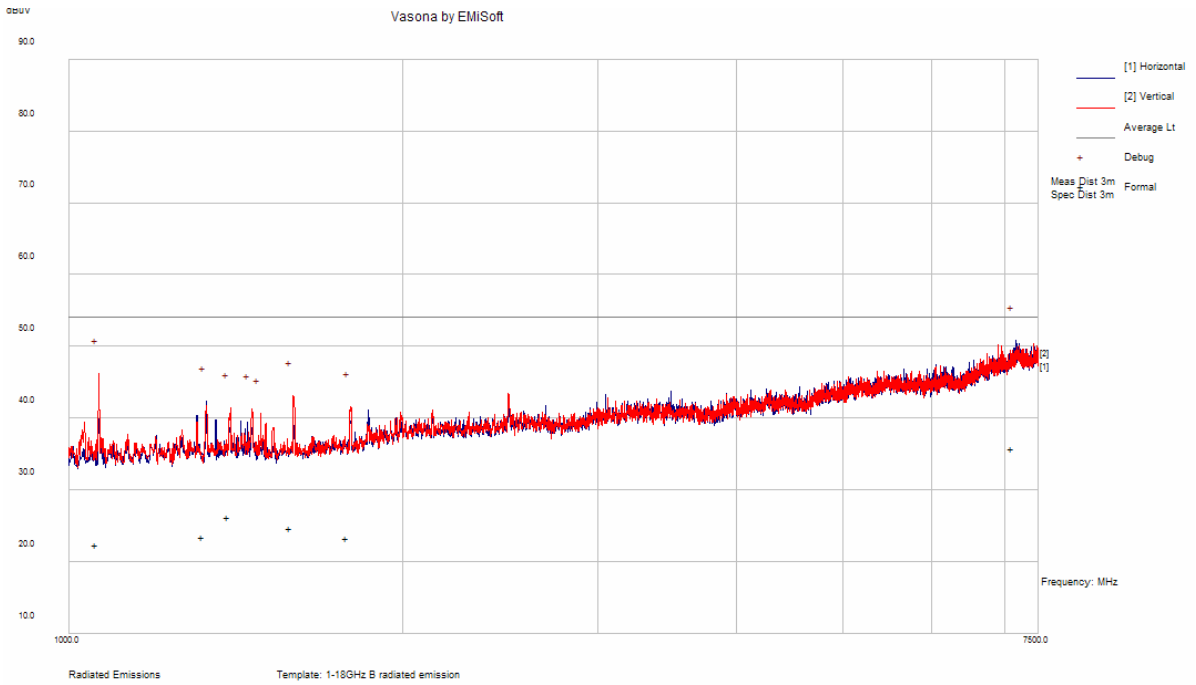
30-1000 MHz:



Quasi-Peak Measurement

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
69.74758	27.36	231	V	258	30	-2.64
143.4253	26.76	98	V	160	30	-3.24
224.9993	25.89	364	H	29	30	-4.11
175.0176	25.35	120	V	263	30	-4.65
111.5604	24.88	98	V	256	30	-5.12
151.1566	19.82	183	V	320	30	-10.18

Above 1 GHz:



Peak Measurement

Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna Height (cm)	Antenna Polarity (H/V)	Turntable Azimuth (degrees)	Limit (dBµV/m)	Margin (dB)
7149.393	35.80	159	H	79	54	-18.20
1400.15	26.23	106	V	268	54	-27.77
1594.411	24.62	97	V	230	54	-29.38
1329.969	23.43	153	H	270	54	-30.57
1794.223	23.27	178	V	260	54	-30.73
1064.413	22.30	170	V	289	54	-31.70

6 FCC §15.247(i) & IC RSS-102 - RF Exposure

6.1 Applicable Standard

According to FCC §15.247(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minutes)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*($180/f^2$)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

Before equipment certification is granted, the procedure of RSS-102 must be followed concerning the exposure of humans to RF fields.

According to IC RSS-102 Issue 2 section 4.1, RF limits used for general public will be applied to the EUT.

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m^2)	Averaging Time (Minutes)
0.003 - 1	280	2.19	-	6
1 - 10	280 / f	2.19 / f	-	6
10 - 30	28	2.19 / f	-	6
30 – 300	28	0.073	2*	6
300 – 1 500	$1.585\ f^{0.5}$	$0.0042\ f^{0.5}$	f / 150	6
1 500 – 15 000	61.4	0.163	10	6
15 000 – 150 000	61.4	0.163	10	$616000 / f^{1.2}$
150 000- 300 000	$0.158\ f^{0.5}$	$4.21 \times 10^{-4}\ f^{0.5}$	$6.67 \times 10^{-5}\ f$	$616000 / f^{1.2}$

Note: *f* is frequency in MHz
* Power density limit is applicable at frequencies greater than 100 MHz

6.2 MPE Prediction

Predication of MPE limit at a given distance, Equation from OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = power density
P = power input to antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal (dBm):	29.52
Maximum peak output power at antenna input terminal (mW):	895
Prediction distance (cm):	20
Prediction frequency (MHz):	902.7
Maximum Antenna Gain, typical (dBi):	5
Maximum Antenna Gain (numeric):	3.16
Power density of prediction frequency at 20.0 cm (mW/cm^2):	0.56
Power density of prediction frequency at 20.0 cm (W/m^2):	5.6
MPE limit for uncontrolled exposure at prediction frequency (mW/cm^2):	0.6018
MPE limit for uncontrolled exposure at prediction frequency (W/m^2):	6.018

6.3 Test Result

The device is compliant with the requirement MPE limit for uncontrolled exposure. The maximum power density at the distance of 20 cm is 0.56 mW/cm^2 (0.56 W/m^2).Limit is 0.6018 mW/cm^2 (6.018 W/m^2).