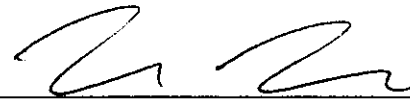


EMISSIONS TEST REPORT**Report Number: 3094995BOX.001a****Project Number: 3094995****Testing performed on the****Radio Module****Model: 900X****To****FCC Part 15 Subpart C 15.247****For****Eka Systems**

Test Performed by:
Intertek – ETL SEMKO
70 Codman Hill Road
Boxborough, MA 01719

Test Authorized by:
Eka Systems
20251 Century Blvd. Suite 120
Germantown, MD, 20874

Prepared by:

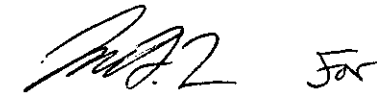


Nicholas Abbondante

Date:

8/14/06

Reviewed by:



Jeff Goulet

Date:

8/16/06

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1.0 Job Description

1.1 Client Information

This EUT has been tested at the request of:

Company: Eka Systems
20251 Century Blvd. Suite 120
Germantown, MD 20874
Contact: Joe Adams
Telephone: 301-990-3450
Fax: 301-990-3451
Email: joe.adams@ekasystems.com

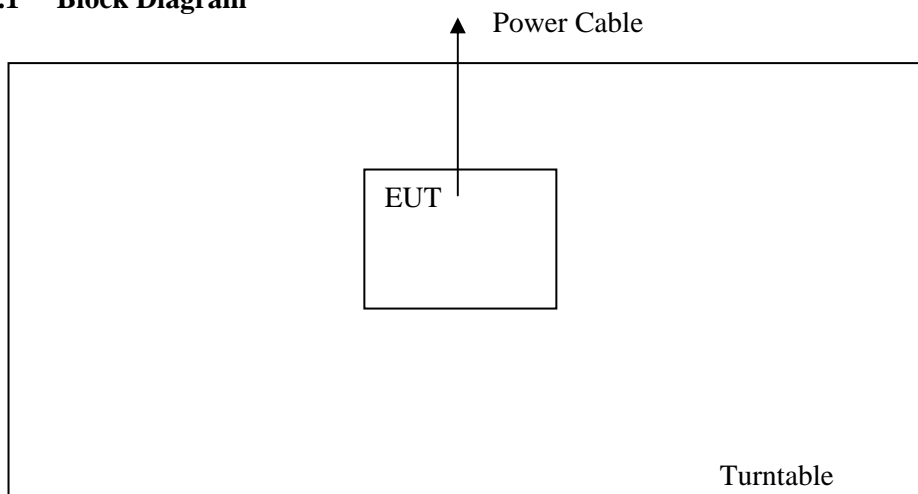
1.2 Equipment Under Test

Equipment Type: Radio Module
Model Number(s): 900X
FCC ID: P9X-900X
Serial number(s): 000104
Manufacturer: Eka Systems
EUT receive date: 03/28/2006
EUT received condition: Prototype in Good condition
Test start date: 03/29/2006
Test end date: 06/01/2006

1.3 Test Plan Reference: Tested according to the standards listed, DA 00-1407, and ANSI C63.4:2003.

1.4 Test Configuration

1.4.1 Block Diagram



1.4.2. Cables:

Cable	Shielding	Connector	Length (m)	Qty.
Power Cable	None	Plastic	2	1

1.4.3. Support Equipment:

Name: CUI Stack DC Power Supply
Model No.: DV-530R
Serial No.: 0601

1.5 Mode(s) of Operation:

The EUT was operated as a module, with 5.0VDC power applied from a power supply running at 120V/60Hz AC power and the EUT was transmitting continuously during testing.

2.0 Test Summary

TEST STANDARD	RESULTS	
FCC Part 15 Subpart C 15.247		
SUB-TEST	TEST PARAMETER	COMMENT
Occupied Bandwidth and Hopping Characteristics FCC 15.247(a)(1), (a)(1)(i)	The hopping characteristics must conform to the requirements of FCC 15.247(a)(1), (a)(1)(ii). The channel bandwidth is the 20 dB bandwidth. The channel separation must be greater than the 20dB bandwidth. The minimum number of hopping channels is 50. The maximum channel dwell time is 0.4 seconds over the period of 20 seconds.	Pass
Transmitter Output Power and EIRP, and Human RF Exposure FCC 15.247(b)(2, 4-5)	The output power must not exceed 1 Watt (30 dBm) and 36 dBm EIRP. The human RF Exposure limit is 1 mW/cm ² .	Pass
Radiated Spurious Emissions FCC 15.205, 15.209, 15.247(d)	The spurious emissions must be attenuated below the level of the fundamental by at least 20 dBc. Emissions which fall in the restricted bands must meet the general limits of 15.209.	Pass
Band Edge Compliance FCC 15.215	The fundamental frequency must stay within the assigned frequency band.	Pass
AC Line-Conducted Emissions FCC 15.207	The AC line-conducted emissions must not exceed the limits of 15.207.	Pass

Notes: The EUT was tested as a module. Channels tested were 903 MHz, 915 MHz, and 927 MHz.

REVISION SUMMARY – The following changes have been made to this Report:

<u>Date</u>	<u>Project No.</u>	<u>Project Handler</u>	<u>Page(s)</u>	<u>Item</u>	<u>Description of Change</u>
8/14/2006	3094995	Nicholas Abbondante	2, 19-20	RF output power	RF output power was re-measured with a 300 kHz bandwidth and the results were updated including the RF exposure calculation. The test end date was adjusted on page 2.

3.0 Sample Calculations

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
 AF = 7.4 dB/m
 CF = 1.6 dB
 AG = 29.0 dB
 FS = 32 dB μ V/m

$$\text{Level in } \mu\text{V/m} = [10(32 \text{ dB}\mu\text{V/m})/20] = 39.8 \mu\text{V/m}$$

The following is how net line-conducted readings were determined:

$$NF = RF + LF + CF + AF$$

Where

- NF = Net Reading in dB μ V
- RF = Reading from receiver in dB μ V
- LF = LISN Correction Factor in dB
- CF = Cable Correction Factor in dB
- AF = Attenuator Loss Factor in dB

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where UF = Net Reading in } \mu\text{V}$$

Example:

$$NF = RF + LF + CF + AF = 28.5 + 0.2 + 0.4 + 20.0 = 49.1 \text{ dB}\mu\text{V}$$

$$UF = 10^{(49.1 \text{ dB}\mu\text{V} / 20)} = 254 \mu\text{V/m}$$

3.1 Measurement Uncertainty

Compliance of the product is based on the measured value. However, the measurement uncertainty is included for informational purposes.

The expanded uncertainty ($k = 2$) for radiated emissions from 30 to 1000 MHz has been determined to be:
 ± 3.5 dB at 10m, ± 3.8 dB at 3m

The expanded uncertainty ($k = 2$) for mains conducted emissions from 150 kHz to 30 MHz has been determined to be:

± 2.6 dB

The expanded uncertainty ($k = 2$) for telecom port conducted emissions from 150 kHz to 30 MHz has been determined to be:

± 3.2 for ISN and voltage probe measurements

± 3.1 for current probe measurements

3.2 Site Description

Test Site(s): 2

Our OATS are 3m and 10m sheltered emissions measurement ranges located in a light commercial environment in Boxborough, Massachusetts. They meet the technical requirements of ANSI C63.4-2003 and CISPR 22:1993/EN 55022:1994 for radiated and conducted emission measurements. The shelter structure is entirely fiberglass and plastic, with outside dimensions of 33 ft x 57 ft. The structure resembles a quonset hut with a center ceiling height of 16.5 ft.

The testing floor is covered by a galvanized sheet metal groundplane that is earth-grounded via copper rods around the perimeter of the site. The joints between individual metal sheets are bridged with a 2 inch wide metal strips to provide low RF impedance contact throughout. The sheets are screwed in place with stainless steel, round-head screws every three inches. Site illumination and HVAC are provided from beneath the ground reference plane through flush entry ports, the port covers are electrically bonded to the ground plane.

A flush metal turntable with 12 ft. diameter and 5000 lb. load capacity (12,000 lb. in Site 3) is provided for floor-standing equipment. A wooden table 80 cm high is used for table-top equipment. The turntable is electrically connected to the ground plane with three copper straps. The straps are connected to the turntable at the center of it with ground braid. The copper strap is directly connected to the groundplane at the edges of the turntable. The turntable is located on the south end of the structure and the antennas are mounted 3 and 10 meters away to the north. The antenna mast is a non-conductive with remote control of antenna height and polarization. The antenna height is adjustable from 1 to 4 meters.

All final radiated emission measurements are performed with the testing personnel and measurement equipment located below the ground reference plane. The site has a full basement underneath the turntable where support equipment may be remotely located. Operation of the antenna, turntable and equipment under test is controlled by remote controls that manipulate the antenna height and polarization and with a turntable control. Test personnel are located below the ellipse when measurements are performed, however the site maintains the ability of having personnel manipulate cables while monitoring test equipment. Ambient radiated emissions are 6 dB or more below the relevant FCC emission limits.

AC mains power is brought to the equipment under test through a power line filter, to remove ambient conducted noise. 50 Hz (240 VAC single phase), 60 Hz power (120 VAC single phase, 208 VAC three phase), and 60 Hz (480 VAC three phase) are available. Conducted emission measurements are performed with a Line Impedance Stabilization Network (LISN) or Artificial Mains Network (AMN) bonded to the ground reference plane. A removable vertical groundplane (2 meter X 2 meter area) is used for line-conducted measurements for table top equipment. The vertical groundplane is electrically connected to the reference groundplane.

The EMC Lab has two Semi-anechoic Chambers and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference groundplanes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

Test Results: Pass

Test Standard: FCC 15.247(a)(1), (a)(1)(i)

Test: Occupied Bandwidth and Hopping Characteristics

Test Environment:

Environmental Conditions During Testing:	Humidity (%):	N/A	Pressure (hPa):	N/A	Ambient (°C):	N/A
Pretest Verification Performed	N/A		Equipment under Test:	900X		

Maximum Test Disturbance Parameters: The channel bandwidth is the 20 dB bandwidth. The channel separation must be greater than the 20dB bandwidth. The minimum number of hopping channels is 50. The maximum channel dwell time is 0.4 seconds over the period of 20 seconds.

Test Equipment Used:

TEST EQUIPMENT LIST					
Item	Equipment Type	Make	Model No.	Serial No.	Next Cal. Due
1	EMI Receiver Set W/RF Filter	Hewlett Packard	8542E	3520A00125	02/28/2007
2	RF FILTER	Hewlett Packard	85420E	3427A00126	02/28/2007
3	10 Meter in floor cable for site 2	ITS	RG214B/U	S2 10M FLR	09/02/2006
4	ANTENNA	EMCO	3142	9701-1116	11/10/2006

Test Details:

Channel	20 dB Bandwidth
903 MHz	190 kHz
915 MHz	190 kHz
927 MHz	190 kHz

Number of Hopping Channels: 50

Channel Separation: 500 kHz

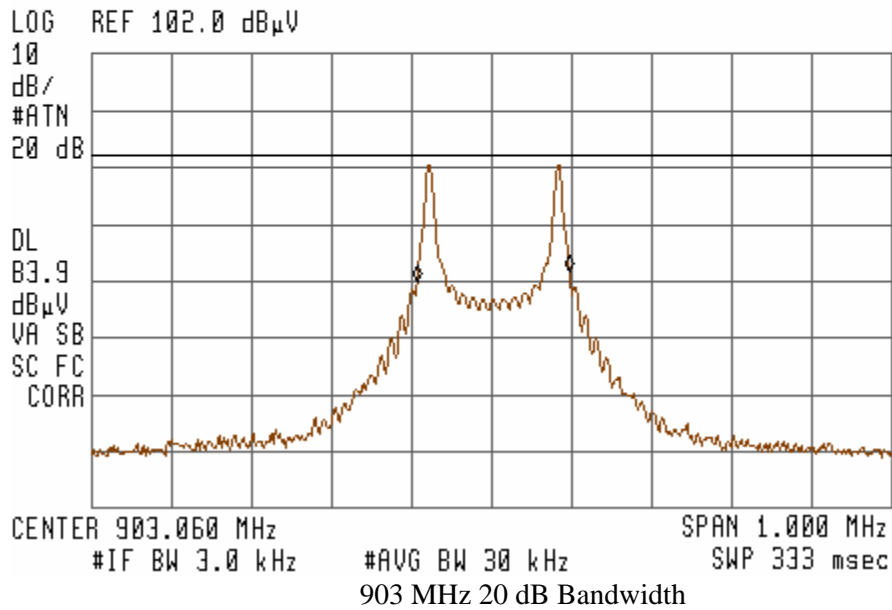
Single Hop Duration: 20 ms

Number of Hops in 20 seconds: 18 hops in 20 seconds (worst case of 5 hops in 5 seconds observed)

Channel dwell time: 360ms in 20 seconds (If the worst case hops observed in 5 seconds were extrapolated to 20 seconds, channel dwell time would be 400 ms, which meets the requirements).

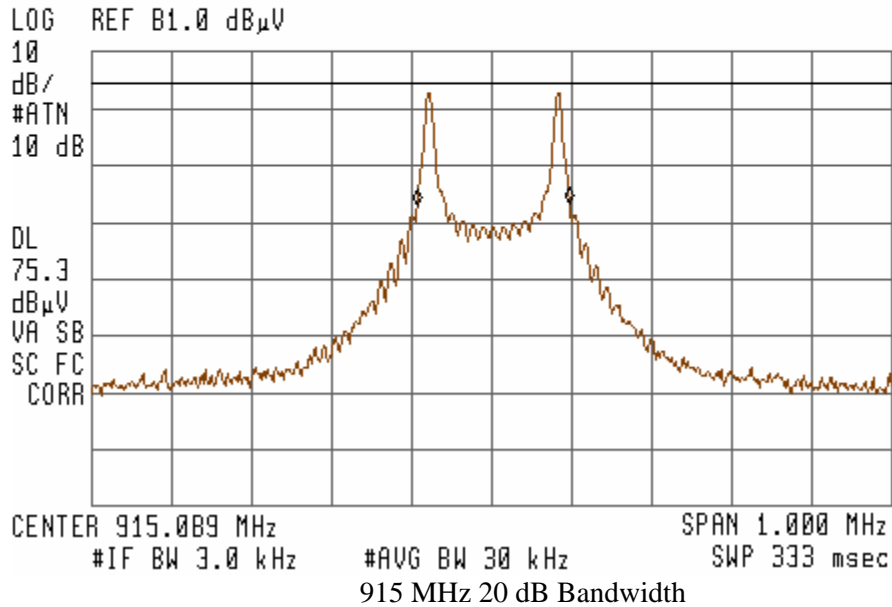
15:17:16 30 MAR 2006

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR Δ 190 kHz
1.89 dB



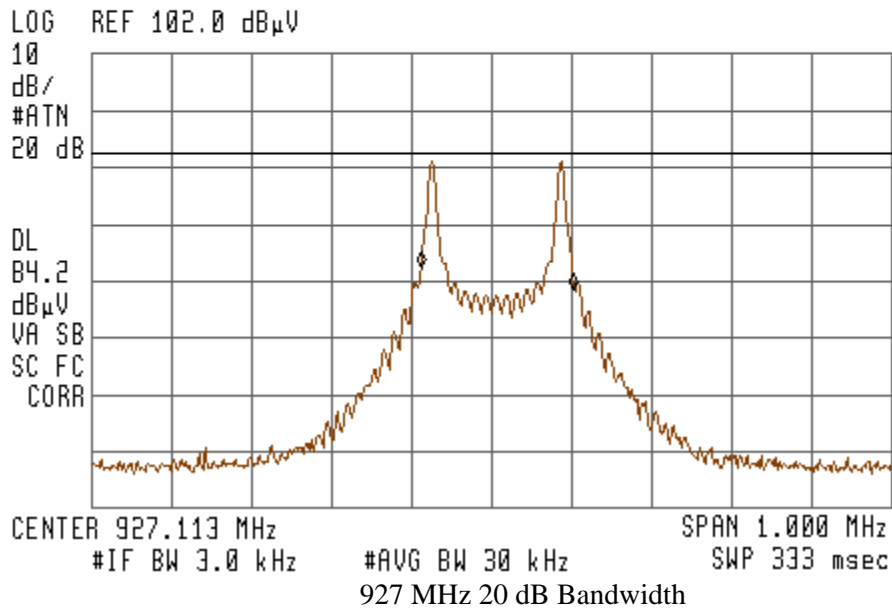
14:21:08 30 MAR 2006

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKRΔ 190 kHz
.47 dB



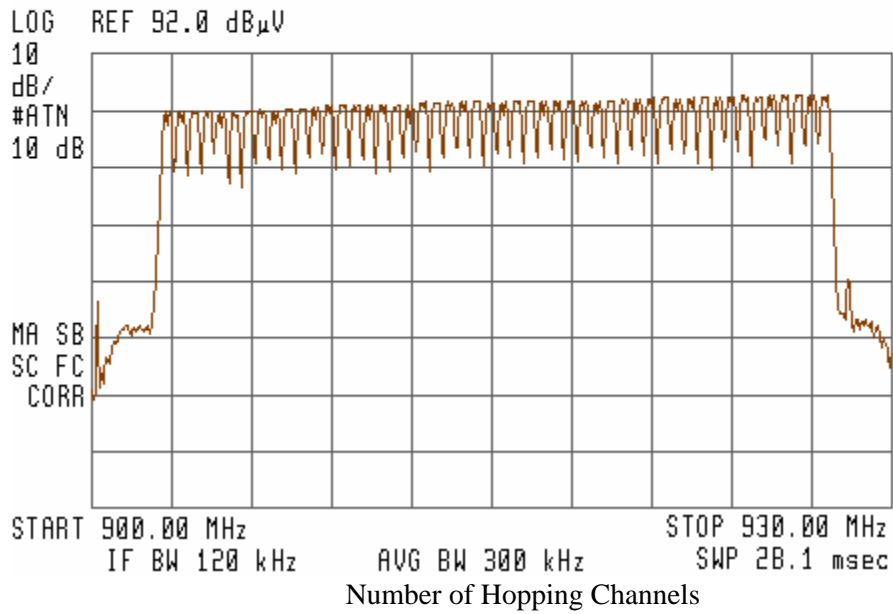
15:42:28 30 MAR 2006

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKRΔ 190 kHz
-3.87 dB



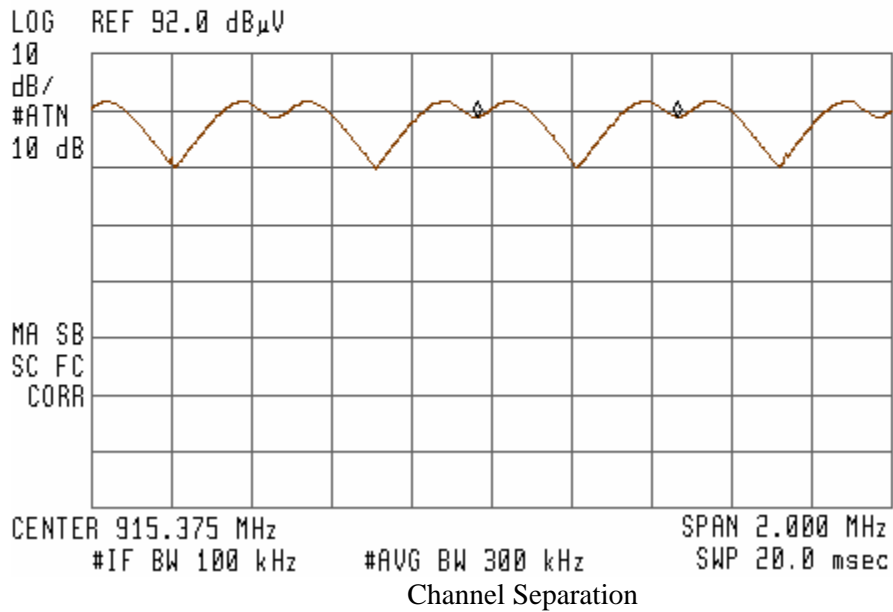
10:52:23 29 MAR 2006

ACTV DET: PEAK
MEAS DET: PEAK QP AVG



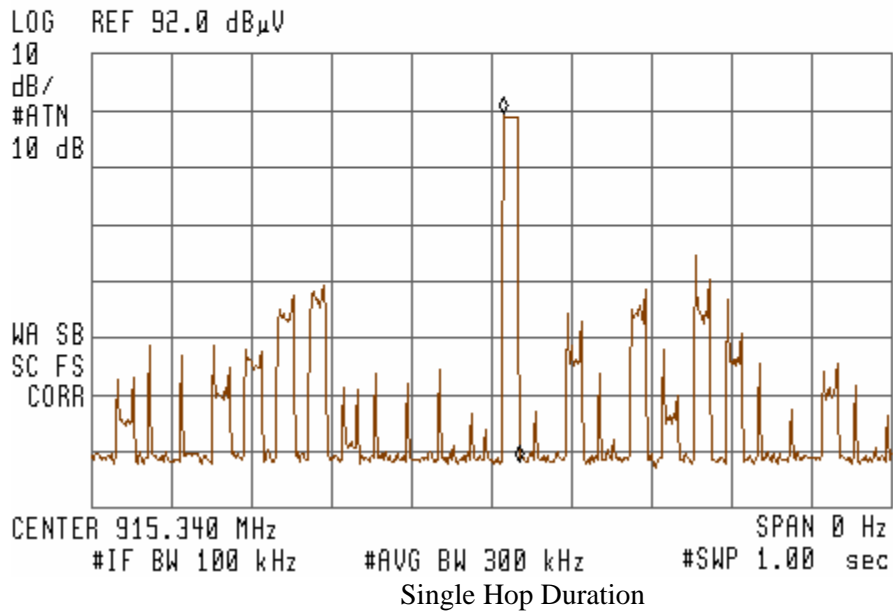
11:45:05 29 MAR 2006

ACTV DET: PEAK
 MEAS DET: PEAK QP AVG
 MKR Δ -500 kHz
 .02 dB



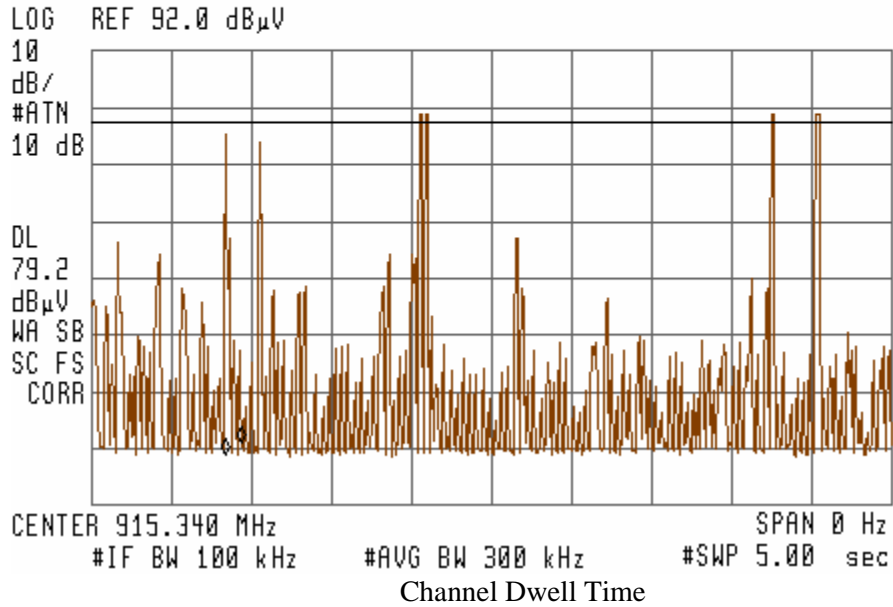
12:21:18 29 MAR 2006

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKRΔ 20.000 msec
-61.44 dB



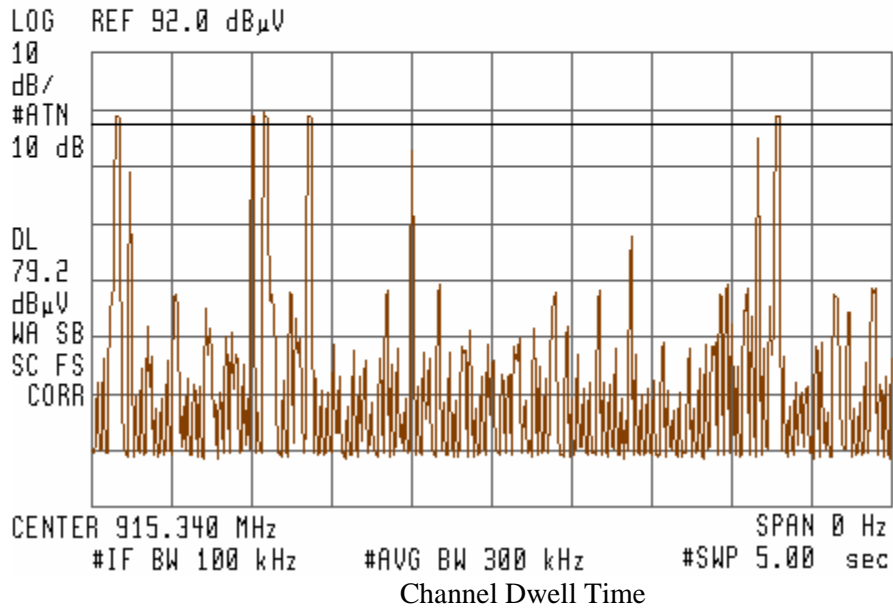
12:35:51 29 MAR 2006

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKRΔ 100.00 msec
2.17 dB



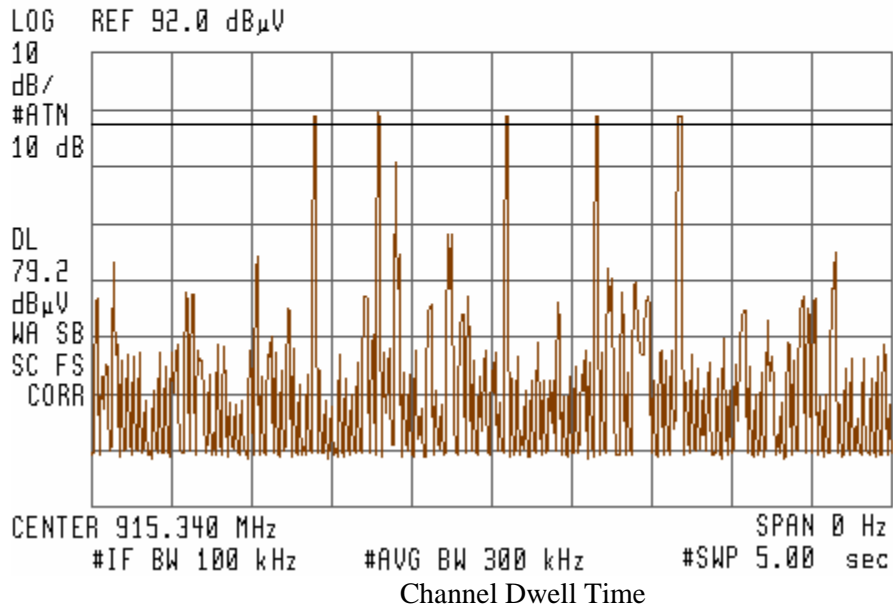
13:00:33 29 MAR 2006

ACTV DET: PEAK
MEAS DET: PEAK QP AVG



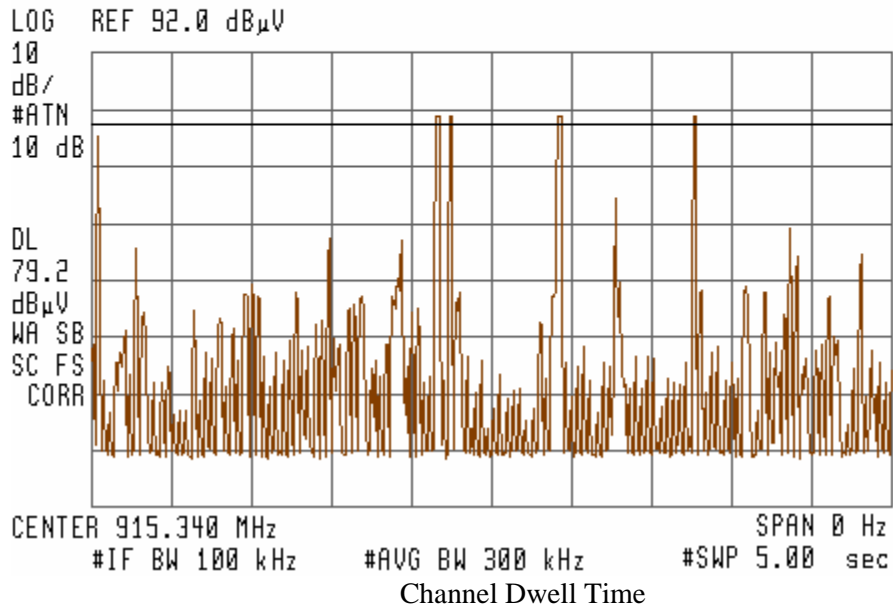
13:14:04 29 MAR 2006

ACTV DET: PEAK
MEAS DET: PEAK QP AVG



13:20:24 29 MAR 2006

ACTV DET: PEAK
MEAS DET: PEAK QP AVG



Test Results: Pass

Test Standard: FCC 15.247(b)(2, 4-5)

Test: Transmitter Output Power and EIRP, and Human RF Exposure

Test Environment:

Environmental Conditions During Testing:	Humidity (%):	See Table	Pressure (hPa):	See Table	Ambient (°C):	See Table
Pretest Verification Performed	Yes		Equipment under Test:		900X	

Maximum Test Disturbance Parameters: The output power must not exceed 1 Watt (30 dBm) and 4 Watts (36 dBm) EIRP. The human RF Exposure limit is 1 mW/cm².

Test Equipment Used:

TEST EQUIPMENT LIST					
Item	Equipment Type	Make	Model No.	Serial No.	Next Cal. Due
1	Digital 4 Line Barometer	Mannix	0ABA116	BAR2	08/02/2007
2	ANTENNA	EMCO	3142	9701-1116	11/10/2006
3	10 Meter in floor cable for site 2	ITS	RG214B/U	S2 10M FLR	09/02/2006
4	EMI Receiver Set W/RF Filter	Hewlett Packard	8542E	3520A00125	02/28/2007
5	RF FILTER	Hewlett Packard	85420E	3427A00126	02/28/2007

Software Utilized:

Name	Manufacturer	Version
EXCEL 2000	Microsoft Corporation	9.0.6926 SP-3
EMI BOXBOROUGH	Intertek	1/17/06 Revision

Test Details:

Notes: The EUT was measured radiatively. The output power was calculated using the formula given in DA 00-0705. The same formula was used to convert the 36.0 dBm EIRP limit to a field strength limit at 3 meters (131.3 dBuV/m). The human RF exposure limit is 1 mW/cm². The power density S generated by some value of EIRP at a given distance d is related by the equation:

$$S = \text{EIRP} / (4\pi d^2)$$

The distance, given a maximum EIRP of 1.68 Watts, at which the radiated power density of the EUT is equal to the human RF exposure limit is 11.6 cm from the antenna.

Radiated Emissions

Company: EKA Systems Inc.
 Model #: MD3000151-001 Rev 4
 Serial #: 000104
 Engineers: Nicholas Abbondante
 Project #: 3094995 Date(s): 06/01/06
 Standard: FCC Part 15 Subpart C 15.247
 Receiver: HP 8542E (REC2/RECFL2) Limit Distance (m): 3
 PreAmp: PRE8 11-21-06.amp Test Distance (m): 10
 Barometer: BAR2 Temp/Humidity/Pressure: 22c 27% 1005mB
 PreAmp Used? (Y or N): N Voltage/Frequency: 120V/60Hz Frequency Range: Fundamental Frequency
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Antenna & Cables: N Bands: N, LF, HF, SHF
 LF Antenna: NONE. NONE.
 N Antenna: LOG1 11-10-06 V10.ant LOG1 11-10-06 H10.ant
 HF Antenna: EMC02 8-11-06 V3m.ant EMC02 8-11-06 H3m.ant
 SHF Antenna: NONE. NONE.
 LF Cable(s): NONE. NONE.
 N Cable(s): S2 10M FLR 9-2-2006.cbl NONE.
 HF Cable(s): CBL028 12-12-2006.txt NONE.
 SHF Cable(s): NONE. NONE.

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth
PK	H	903.000	88.0	23.2	5.9	0.0	-10.5	127.5	131.3	-3.8	300/1000 kHz
PK	H	915.000	87.7	23.0	5.8	0.0	-10.5	126.9	131.3	-4.3	300/1000 kHz
PK	H	927.000	87.3	22.8	5.7	0.0	-10.5	126.2	131.3	-5.0	300/1000 kHz

Test Results: Pass

Test Standard: FCC 15.205, 15.209, 15.247(d)

Test: Radiated Spurious Emissions

Test Environment:

Environmental Conditions During Testing:	Humidity (%):	See Table	Pressure (hPa):	See Table	Ambient (°C):	See Table
Pretest Verification Performed	Yes		Equipment under Test:	900X		

Maximum Test Disturbance Parameters: The spurious emissions must be attenuated below the level of the fundamental by at least 20 dBc. Emissions which fall in the restricted bands must meet the general limits of 15.209.

Test Equipment Used:

TEST EQUIPMENT LIST					
Item	Equipment Type	Make	Model No.	Serial No.	Next Cal. Due
1	EMI Receiver Set W/RF Filter	Hewlett Packard	8542E	3520A00125	02/28/2007
2	RF FILTER	Hewlett Packard	85420E	3427A00126	02/28/2007
3	Spectrum Analyzer 20Hz - 40 GHz	Rohde & Schwartz	FSEK-30	100225	07/26/2006
4	Digital 4 Line Barometer	Mannix	0ABA116	BAR2	08/02/2007
5	PREAMPLIFIER 1- 40 GHz	MITEQ	NSP4000-NF	507145	11/21/2006
6	10 Meter in floor cable for site 2	ITS	RG214B/U	S2 10M FLR	09/02/2006
7	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 80	CBL030	12/12/2006
8	High Frequency Cable 40GHz	Megaphase	TM40 K1K1 197	CBL028	12/12/2006
9	ANTENNA	EMCO	3142	9701-1116	11/10/2006
10	ANTENNA, RIDGED GUIDE, 1-18 GHZ	EMCO	3115	2784	08/11/2007

Software Utilized:

Name	Manufacturer	Version
EXCEL 2000	Microsoft Corporation	9.0.6926 SP-3
EMI BOXBOROUGH	Intertek	1/17/06 Revision

Test Details:

Notes: CBL030 and PRE8 were also used to verify that there were no emissions up to 10 GHz. A 1 GHz high pass filter was also used above 1 GHz, Filtek Filter Model HP12/1000-5AB, Serial number 15B60-01, calibration due date of 03/06/2007. Where the filter was used, the filter factor was added directly to the field strength reading when the measurement was recorded.

Radiated Emissions

Company: EKA Systems Inc. Antenna & Cables: N Bands: N, LF, HF, SHF
 Model #: 900X LF Antenna: NONE. NONE.
 Serial #: 000104 N Antenna: LOG1 11-10-06 V10.ant LOG1 11-10-06 H10.ant
 Engineers: Nicholas Abbondante Location: Site 2 HF Antenna: EMC02 8-11-06 V3m.ant EMC02 8-11-06 H3m.ant
 Project #: 3094995 Date(s): 03/30/06 03/31/06 SHF Antenna: NONE. NONE.
 Standard: FCC Part 15 Subpart C 15.247 LF Cable(s): NONE. NONE.
 Receiver: HP 8542E (REC2/RECFL2) Limit Distance (m): 3 N Cable(s): S2 10M FLR 9-2-2006.cbl NONE.
 PreAmp: PRE8 11-21-06.amp Test Distance (m): 10 HF Cable(s): CBL028 12-12-2006.txt NONE.
 Barometer: BAR2 Temp/Humidity/Pressure: 22c 27% 1005mB SHF Cable(s): NONE. NONE.
 PreAmp Used? (Y or N): N Voltage/Frequency: Frequency Range:
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth
PK	V	196.600	18.2	10.1	2.8	0.0	-10.5	41.6	108.9	-67.3	120/300 kHz

FCC

Radiated Emissions

Company: EKA Systems Inc. Antenna & Cables: HF Bands: N, LF, HF, SHF
 Model #: 900X LF Antenna: NONE. NONE.
 Serial #: 000104 N Antenna: LOG1 11-10-06 V10.ant LOG1 11-10-06 H10.ant
 Engineers: Nicholas Abbondante Location: Site 2 HF Antenna: EMC02 8-11-06 V3m.ant EMC02 8-11-06 H3m.ant
 Project #: 3094995 Date(s): 03/31/06 04/03/06 04/04/06 SHF Antenna: NONE. NONE.
 Standard: FCC Part 15 Subpart C 15.247 LF Cable(s): NONE. NONE.
 Receiver: R&S FSEK-30 (ROS001) Limit Distance (m): 3 N Cable(s): S2 10M FLR 9-2-2006.cbl NONE.
 PreAmp: PRE8 11-21-06.amp Test Distance (m): 3 HF Cable(s): CBL028 12-12-2006.txt NONE.
 Barometer: BAR2 Temp/Humidity/Pressure: 21c 35% 987mB SHF Cable(s): NONE. NONE.
 PreAmp Used? (Y or N): N Voltage/Frequency: 120V/60Hz Frequency Range: 1 - 10 GHz
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Detector Type	Ant. Pol. (V/H)	Frequency MHz	Reading dB(uV)	Antenna Factor dB(1/m)	Cable Loss dB	Pre-amp Factor dB	Distance Factor dB	Net dB(uV/m)	Limit dB(uV/m)	Margin dB	Bandwidth	
PK	H	1806.200	40.0	26.7	2.7	0.0	0.0	69.3	108.9	-39.6	100/300 kHz	FCC
PK	H	2709.400	20.6	29.2	3.4	0.0	0.0	53.2	74.0	-20.8	1/3 MHz	RB
AVG	H	2709.400	13.3	29.2	3.4	0.0	0.0	45.9	54.0	-8.1	1/3 MHz	RB
PK	H	3612.300	21.7	31.6	4.1	0.0	0.0	57.3	74.0	-16.7	1/3 MHz	RB
AVG	H	3612.300	12.4	31.6	4.1	0.0	0.0	48.0	54.0	-6.0	1/3 MHz	RB
PK	H	4515.400	21.8	32.4	4.7	0.0	0.0	59.0	74.0	-15.0	1/3 MHz	RB
AVG	H	4515.400	12.8	32.4	4.7	0.0	0.0	49.9	54.0	-4.1	1/3 MHz	RB
PK	H	6321.500	21.7	34.6	5.9	0.0	0.0	62.2	108.9	-46.7	100/300 kHz	
PK	H	7224.500	21.8	35.9	6.5	0.0	0.0	64.1	108.9	-44.8	100/300 kHz	
PK	H	1830.300	37.4	26.8	2.7	0.0	0.0	66.9	108.9	-42.0	100/300 kHz	
PK	H	2745.300	20.7	29.3	3.4	0.0	0.0	53.4	74.0	-20.6	1/3 MHz	RB
AVG	H	2745.300	12.4	29.3	3.4	0.0	0.0	45.1	54.0	-8.9	1/3 MHz	RB
PK	H	3660.400	21.4	31.7	4.1	0.0	0.0	57.2	74.0	-16.8	1/3 MHz	RB
AVG	H	3660.400	12.4	31.7	4.1	0.0	0.0	48.2	54.0	-5.8	1/3 MHz	RB
PK	H	4575.500	23.0	32.5	4.7	0.0	0.0	60.3	74.0	-13.7	1/3 MHz	RB
AVG	H	4575.500	12.4	32.5	4.7	0.0	0.0	49.7	54.0	-4.3	1/3 MHz	RB
PK	V	1854.400	35.8	26.7	2.7	0.0	0.0	65.2	108.9	-43.7	100/300 kHz	
PK	V	2781.300	21.4	29.3	3.4	0.0	0.0	54.1	74.0	-19.9	1/3 MHz	RB
AVG	V	2781.300	12.4	29.3	3.4	0.0	0.0	45.2	54.0	-8.8	1/3 MHz	RB
PK	V	3708.400	24.0	31.7	4.1	0.0	0.0	59.8	74.0	-14.2	1/3 MHz	RB
AVG	V	3708.400	14.0	31.7	4.1	0.0	0.0	49.8	54.0	-4.2	1/3 MHz	RB
PK	V	4635.500	23.0	32.6	4.8	0.0	0.0	60.4	74.0	-13.6	1/3 MHz	RB
AVG	V	4635.500	12.4	32.6	4.8	0.0	0.0	49.8	54.0	-4.2	1/3 MHz	RB

Setup Photos





Test Results: Pass

Test Standard: FCC 15.215

Test: Band Edge Compliance

Test Environment:

Environmental Conditions During Testing:	Humidity (%):	N/A	Pressure (hPa):	N/A	Ambient (°C):	N/A
Pretest Verification Performed	N/A		Equipment under Test:	900X		

Maximum Test Disturbance Parameters: The fundamental frequency must stay within the assigned frequency band.

Test Equipment Used:

TEST EQUIPMENT LIST					
Item	Equipment Type	Make	Model No.	Serial No.	Next Cal. Due
1	EMI Receiver Set W/RF Filter	Hewlett Packard	8542E	3520A00125	02/28/2007
2	RF FILTER	Hewlett Packard	85420E	3427A00126	02/28/2007
3	ANTENNA	EMCO	3142	9701-1116	11/10/2006
4	10 Meter in floor cable for site 2	ITS	RG214B/U	S2 10M FLR	09/02/2006

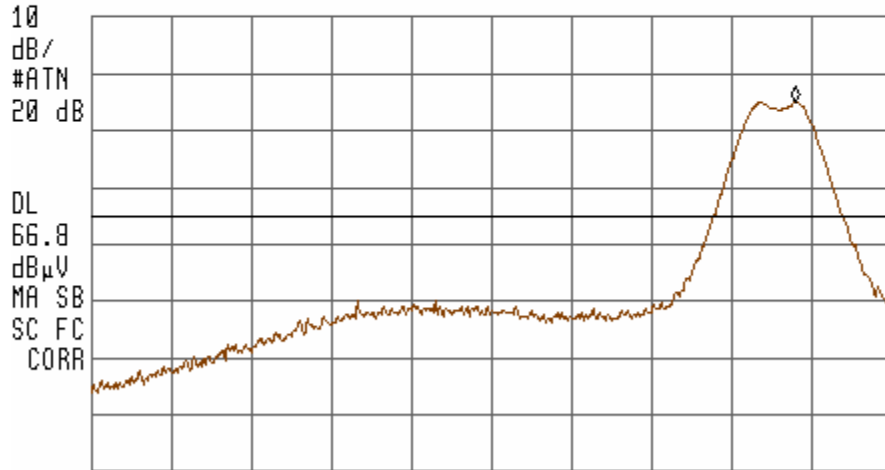
Test Details:

Notes: A display line was placed 20 dB down from the fundamental signal level. It can be seen that all emissions at the band edge are below this line and therefore comply with the out of band emissions requirements.

15:25:55 30 MAR 2006

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 903.133 MHz
86.75 dB μ V

LOG REF 102.0 dB μ V

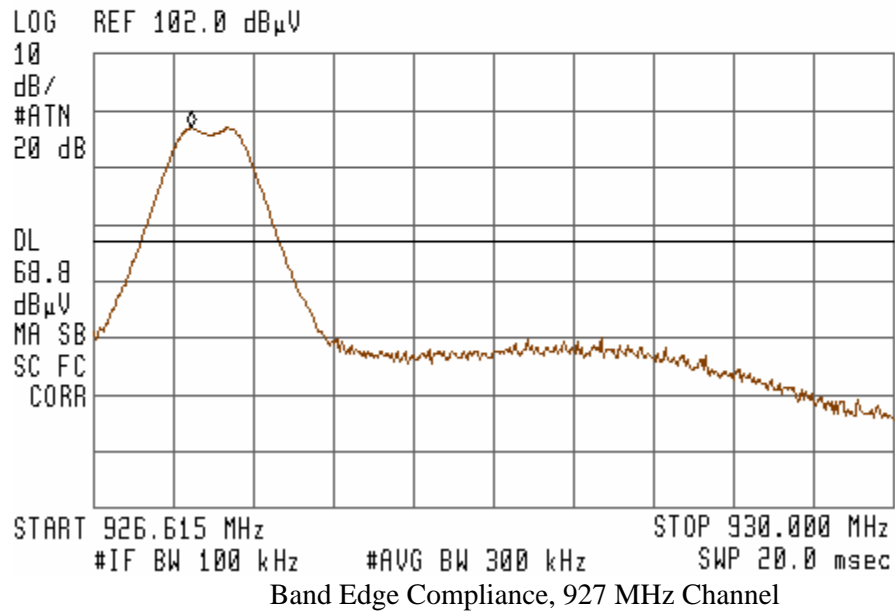


START 900.000 MHz STOP 903.560 MHz
#IF BW 100 kHz #AVG BW 300 kHz SWP 20.0 msec

Band Edge Compliance, 903 MHz Channel

15:35:21 30 MAR 2006

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 927.030 MHz
88.82 dBμV



Test Results: Pass

Test Standard: FCC 15.207

Test: AC Line-Conducted Emissions

Test Environment:

Environmental Conditions During Testing:	Humidity (%):	See Table	Pressure (hPa):	See Table	Ambient (°C):	See Table
Pretest Verification Performed	Yes		Equipment under Test:		900X	

Maximum Test Disturbance Parameters: Emissions must meet the general limits of 15.207.

Test Equipment Used:

TEST EQUIPMENT LIST					
Item	Equipment Type	Make	Model No.	Serial No.	Next Cal. Due
1	Digital 4 Line Barometer	Mannix	0ABA116	BAR2	08/02/2007
2	Cable, BNC - BNC, 15' long	Belden	RG-58/U	CBL022	01/03/2007
3	EMI Receiver Set W/RF Filter	Hewlett Packard	8542E	3520A00125	02/28/2007
4	RF FILTER	Hewlett Packard	85420E	3427A00126	02/28/2007
5	LISN, 50uH, .01 - 50MHz, 24A	Solar Electronics	9252-50-R-24-BNC	941713	07/05/2007
6	Attenuator, 20dB	Mini Circuits	20dB, 50 ohm	DS24	08/12/2006

Software Utilized:

Name	Manufacturer	Version
EXCEL 2000	Microsoft Corporation	9.0.6926 SP-3
EMI BOXBOROUGH	Intertek	1/17/06 Revision

Test Details:

Conducted Emissions

Company: EKA Systems Inc. Receiver: HP 8542E (REC2/RECFL2)
 Model #: 900X Cable: CBL022 1-03-07.cbl
 Serial #: 000104 LISN 1: LISN11 [1] 7-05-06.lsn
 Engineer(s): Nicholas Abbondante Location: Site 2 LISN 2: LISN11 [2] 7-05-06.lsn
 Project #: 3094995 Date: 04/05/06 LISN 3: NONE.
 Standard: FCC Part 15 Subpart C 15.247 LISN 4: NONE.
 Barometer: BAR2 Temp/Humidity/Pressure: 21c 31% 994mB Attenuator: DS24 8-12-06.txt
 Voltage/Frequency: 120V/60Hz Frequency Range: 150 kHz - 30 MHz
 Net is the sum of worst-case lisn, cable, & attenuator losses, and initial reading, factors are not shown
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor; Bandwidth denoted as RBW/VBW

Detector Type	Frequency MHz	Reading Line 1 dB(uV)	Reading Line 2 dB(uV)	Reading Line 3 dB(uV)	Reading Line 4 dB(uV)	Net dB(uV)	QP Limit dB(uV)	Margin dB	Bandwidth
QP	0.154	22.0	21.5			42.8	65.8	-23.0	9/30 kHz
QP	0.192	20.4	19.7			41.2	63.9	-22.7	9/30 kHz
QP	0.511	14.9	13.6			35.8	56.0	-20.2	9/30 kHz
QP	1.293	3.4	3.2			24.3	56.0	-31.7	9/30 kHz
QP	9.841	8.8	-2.4			30.1	60.0	-29.9	9/30 kHz
QP	11.910	2.7	-0.2			24.0	60.0	-36.0	9/30 kHz

Detector Type	Frequency MHz	Reading Line 1 dB(uV)	Reading Line 2 dB(uV)	Reading Line 3 dB(uV)	Reading Line 4 dB(uV)	Net dB(uV)	Average Limit dB(uV)	Margin dB	Bandwidth
AVG	0.154	-10.9	-11.5			9.9	55.8	-45.9	9/30 kHz
AVG	0.192	-12.8	-12.6			8.2	53.9	-45.7	9/30 kHz
AVG	0.511	-16.5	-17.5			4.4	46.0	-41.6	9/30 kHz
AVG	1.293	-20.1	-20.3			0.8	46.0	-45.2	9/30 kHz
AVG	9.841	7.3	-11.4			28.6	50.0	-21.4	9/30 kHz
AVG	11.910	0.2	-1.0			21.5	50.0	-28.5	9/30 kHz

Setup Photos



