TEST REPORT

Report Number: 100294885MPK-001
Project Number: 100294885
December 29, 2010

Testing performed on the
Scanning Receiver
Model Number: ADV0602903
FCC ID: ADV0602903
to

FCC Part 15, Subpart B

Class: B

for

GRE America

Test Performed by:	Test Authorized by:
Intertek	GRE America
1365 Adams Court	425 Harbor Blvd. Suite B
Menlo Park, CA 94025	Belmont, CA 94002
USA	USA

Prepared by: _____ **Date:** December 29, 2010
Ollie Moyrong

Reviewed by: _____ **Date:** December 29, 2010
Krishna K Vemuri

VERIFICATION OF COMPLIANCE
Report No. 100294885MPK-001

Verification is hereby issued to the named APPLICANT and is VALID ONLY for the equipment identified hereon for use under the rules and regulations listed below.

Equipment Under Test:	Scanning Receiver
Trade Name:	GRE America
Model No.:	ADV0602903
Serial No.	000011
Applicant:	GRE America
Contact:	Mr. Raj Gounder
Address:	425 Harbor Blvd. Suite B Belmont, CA 94002
Country	USA
Tel. number:	650-591-1400
Fax number:	650-591-2001
Applicable Regulation:	FCC Part 15, Subpart B
Equipment Class:	Class B
Date of Test:	December 22, 2010

We attest to the accuracy of this report:

Ollie Moyrong
Engineering Manager

Krishna Vemuri
Senior Staff EMC Engineer

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1.0 General Description

1.1 Product Description

The Equipment Under Test (EUT) is a Digital Scanning Receiver, model ADV0602903.

Refer to the attached specifications sheets in Appendix B for more details.

A production version of the sample was received on December 20, 2010 in good condition. As declared by the Applicant, it is identical to production units.

1.2 Related Submittal(s) Grants

This is a single application for certification of a scanning receiver.

1.3 Test Methodology

Both conducted (if applicable) and radiated emission measurements were performed according to the procedures in ANSI C63.4. All radiated measurements were performed in a semi-anechoic chamber. Radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the **"Data Section"** of this Application.

1.4 Test Facility

The test site and conducted measurement facility used to collect the radiated data is Site 1, a 10 meter semi-anechoic chamber. This test facility and site measurement data have been fully placed on file with the FCC and A2LA accredited.

1.5 Summary of Test Results

Model: ADV0602903
FCC ID: ADV0602903

TEST	REFERENCE	RESULTS
Radiated Emission	15.109	Complies
AC Line Conducted Emission	15.107	Not Applicable[1]
Antenna Conducted Emission	15.111	Complies
FCC Part 15.121 Requirement	15.121	Complies[2]

[1] Not Applicable. The equipment is battery powered and does not contain an external power port.
[2] Refer to file: GRE ADV0602903 REPORT FOR FCC RULE PART 15.121

2.0 System Test Configuration

2.1 Justification

The tests were performed according to the test procedure as outlined in CFR47 Part 15.31 and in ANSI C63.4.

For emission testing, the equipment under test (EUT) was configured for testing in a typical fashion (as a customer would normally use it). During testing, all cables were manipulated to produce worst-case emissions.

For the measurements, the EUT is placed on top of a non-conductive table. If the EUT attaches to peripherals, they are connected and operational (as typical as possible).

For radiated emission measurements, the signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance. All readings are extrapolated back to the equivalent three-meter reading using inverse scaling with distance if measured at a closer distance.

2.2 EUT Exercising Software

The unit was setup to receive continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing.

2.3 Mode of Operation

The EUT was tested in two modes:

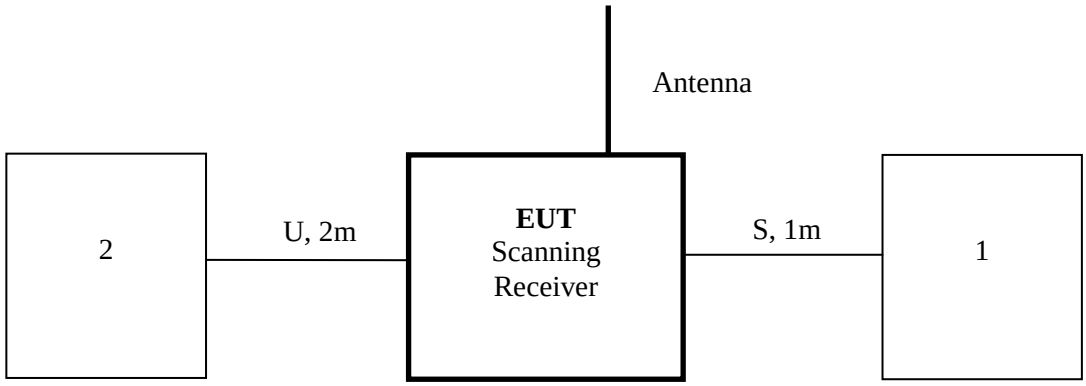
Test Mode 1: The EUT was set to constantly receive at the low, middle and high channels of each band.

Test Mode 2: The EUT was set to constantly scan all bands.

2.4 Support Equipment List and Description

Item #	Description	Model No.	Serial No.
1	Compaq Laptop Computer	Evo N620C	6060A0113002 CM-2 S99
2	Headphones	Not Labeled	Not Labeled

2.5 Equipment Setup Block Diagram



U: Unshielded
S: Shielded
m: meter

2.6 Equipment Modification

Intertek Testing Services installed no modifications.

3.0 Emission Test Results

AC line conducted emission measurements were performed from 0.15 MHz to 30 MHz. Analyzer resolution is 10 kHz or greater.

Radiated emission measurements and antenna conducted emission measurements were performed from 30 MHz to 10,000 MHz. Analyzer resolution is 100 kHz or greater for frequencies from 30 MHz to 1000 MHz, 1 MHz - for frequencies above 1000 MHz.

Preliminary tests were performed to determine the worst-case emission with the EUT tuned to the low, middle and high channels of each band. From these preliminary measurements the EUT was tuned to the frequency with the highest emission and the final scan was performed using the automated test software.

The same procedure was used to determine the worst-case emission level with the EUT setup in scanning mode for each band.

The final recorded data reflects the worst-case result.

A sample calculation and data tables of the emissions are included.

All measurements were performed with peak detection unless otherwise specified.

3.1 Field Strength Calculation

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 + DF

Where FS = Field Strength in dB(µV/m)
RA = Receiver Amplitude (including preamplifier) in dB(µV)
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB(1/m)
AG = Amplifier Gain in dB
DF = Distance Factor in dB

Assume a receiver reading of 52.0 dB(µV) is obtained. The antennas factor of 7.4 dB(1/m) and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving field strength of 32 dB(µV/m). This value in dB(µV/m) was converted to its corresponding level in µV/m.

RA = 52.0 dB(µV)
AF = 7.4 dB(1/m)
CF = 1.6 dB
AG = 29.0 dB
DF = 0 dB
FS = 52 +7.4 +1.6 –29.0 + 0 = 32 dB(µV/m)
Level in µV/m = Common Antilogarithm [(32 dB(µV/m)/20] = 39.8 µV/m

3.2 Radiated Emission Data

Tested By:	Olie Moyrong
Test Date:	December 22, 2010

The results on the following page(s) were obtained when the device was tested in the condition described in Section 2.

Results:	**Complies**

3.2 Test Data (Continued)

FCC Part 15.109 Class B Radiated Emissions Data

Intertek
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (QP-Vertical)

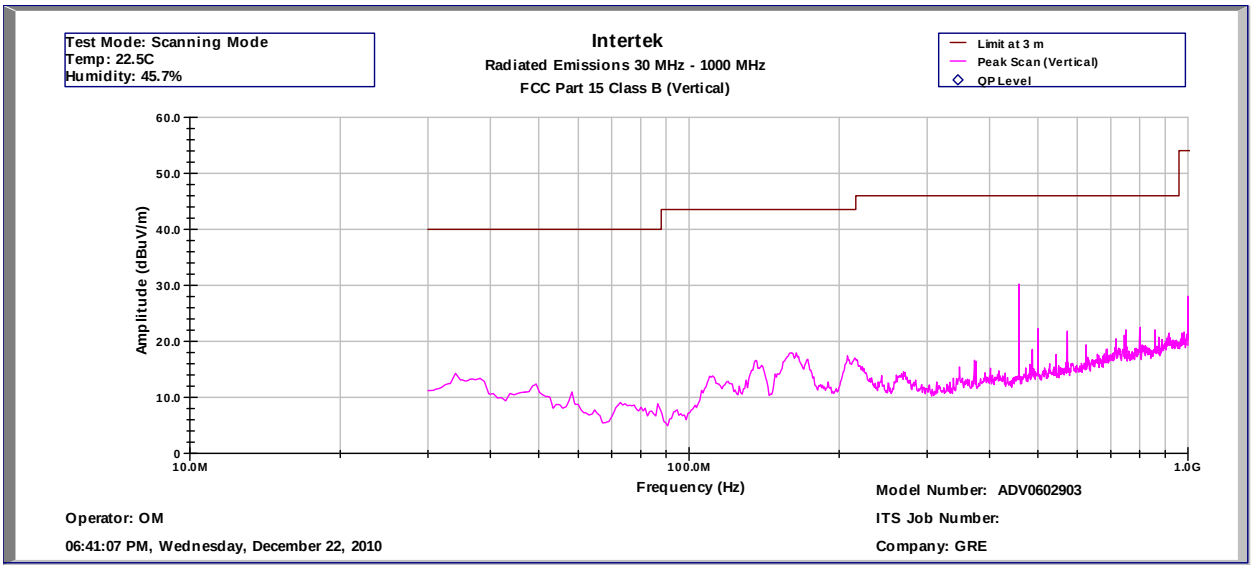
Operator: OM Model Number:ADV0602903

07:45:10 PM, Wednesday, December 22, 2010 Company: GRE

Tuned Frequency	Measured Frequency	Quasi Pk FS	Limit@3m	RA	AG	CF	AF	Margin
MHz	Hz	dB(uV/m)	dB(uV/m)	dB(uV)	dB	dB	dB(1/m)	dB
764.0	3.832E+08	24.7	46.0	39.2	31.8	1.5	15.8	-21.3
25.0	4.058E+08	22.8	46.0	37.1	31.9	1.6	16.0	-23.2
41.0	4.218E+08	22.1	46.0	35.8	31.9	1.6	16.6	-23.9
806.0	4.252E+08	23.1	46.0	36.7	31.9	1.6	16.7	-22.9
54.0	4.348E+08	23.8	46.0	38.0	31.9	1.6	16.1	-22.2
860.0	4.792E+08	25.7	46.0	38.4	31.9	1.7	17.5	-20.3
108.0	4.888E+08	25.7	46.0	38.3	31.9	1.7	17.6	-20.3
124.0	5.048E+08	25.5	46.0	37.8	31.9	1.8	17.8	-20.5
136.0	5.168E+08	24.4	46.0	36.6	32.0	1.8	18.0	-21.6
137.0	5.178E+08	25.2	46.0	37.3	32.0	1.8	18.1	-20.8
154.1	5.349E+08	23.4	46.0	35.2	32.0	1.8	18.4	-22.6
174.0	5.548E+08	24.0	46.0	35.8	32.0	1.9	18.3	-22.0
960.0	5.792E+08	29.9	46.0	41.0	32.0	1.9	19.0	-16.1
216.0	5.968E+08	27.1	46.0	38.1	32.0	2.0	19.0	-18.9
225.0	6.058E+08	27.7	46.0	38.7	32.0	2.0	19.0	-18.3
310.0	6.908E+08	34.9	46.0	44.7	32.1	2.1	20.2	-11.1
406.0	7.868E+08	35.2	46.0	43.4	32.0	2.3	21.5	-10.8
450.0	8.308E+08	36.0	46.0	43.8	31.9	2.3	21.8	-10.0
1240.0	8.592E+08	35.2	46.0	42.8	31.8	2.4	21.8	-10.8
1270.0	8.892E+08	36.4	46.0	43.1	31.6	2.5	22.4	-9.6
512.0	8.928E+08	37.0	46.0	43.6	31.6	2.5	22.5	-9.0
1300.0	9.192E+08	36.4	46.0	42.5	31.5	2.5	22.9	-9.6

Test Mode: Tuned Frequency
Temp: 22.5C
Humidity: 45.7%

3.2 Test Data (Continued)



Intertek
Radiated Emissions 30 MHz- 1000 MHz
FCC Part 15 Class B (Pk-Vertical)

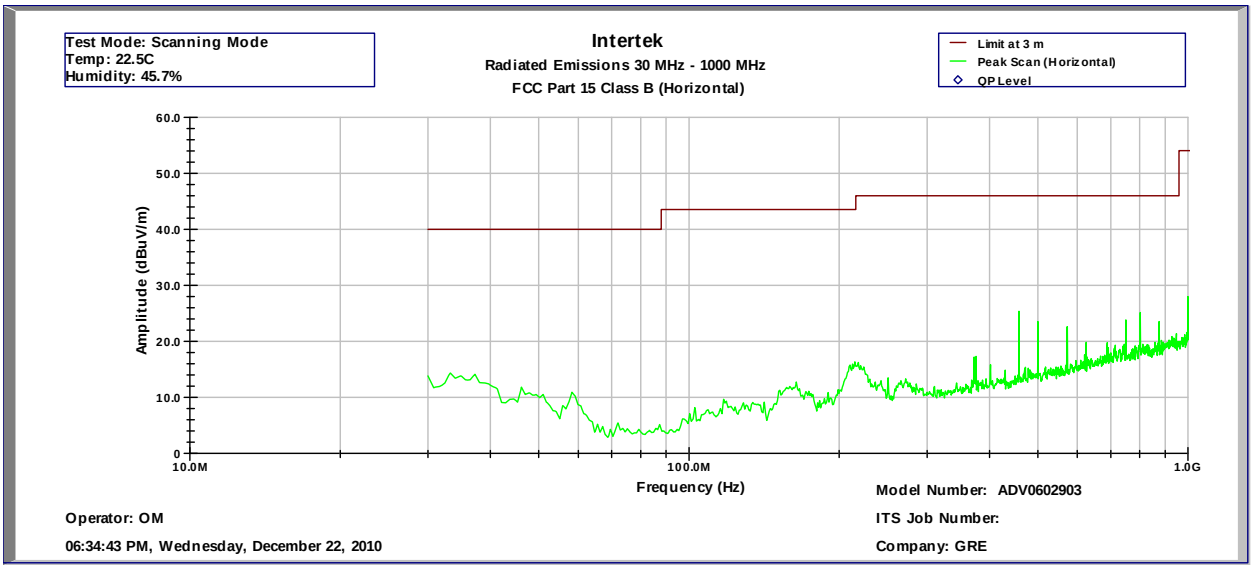
Operator: OM — Model Number: ADV0602903

Current Time - 06:43:23 PM, Wednesday, December 22, 2010 — Company: GRE

Frequency	Peak FS	Limit@3m	Margin	RA	AG	CF	AF
(Hz)	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.404E+07	14.2	40.0	-16.0	27.7	31.9	0.4	18.0
1.360E+08	16.6	43.5	-19.5	36.7	31.9	0.9	10.9
1.642E+08	17.9	43.5	-19.5	40.2	31.9	1.0	8.6
2.078E+08	17.5	43.5	-19.5	37.5	31.9	1.1	10.8
4.584E+08	30.3	46.0	-22.0	43.3	31.9	1.7	17.2
5.005E+08	22.3	46.0	-22.0	34.8	31.9	1.7	17.7
5.732E+08	21.8	46.0	-22.0	33.2	32.0	1.9	18.7
9.992E+08	28.0	54.0	-30.0	32.9	30.9	2.6	23.4

Test Mode: Scanning Mode
Temp: 22.5C
Humidity: 45.7%

3.2 Test Data (Continued)



Intertek
Radiated Emissions 30 MHz - 1000 MHz
FCC Part 15 Class B (Pk-Horizontal)

Operator: OM — Model Number: ADV0602903

Current Time - 06:43:51 PM, Wednesday, December 22, 2010 — Company: GRE

Frequency	Pk FS	Limit@3m	Margin	RA	PA	CF	AF
(Hz)	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB	dB(1/m)
3.323E+07	14.3	40.0	-16.0	27.5	31.9	0.4	18.3
2.151E+08	16.3	43.5	-19.5	35.8	31.9	1.1	11.3
3.760E+08	17.3	46.0	-22.0	31.9	31.8	1.5	15.7
4.584E+08	25.4	46.0	-22.0	38.4	31.9	1.7	17.2
5.005E+08	23.5	46.0	-22.0	36.0	31.9	1.7	17.7
5.732E+08	22.6	46.0	-22.0	34.0	32.0	1.9	18.7
7.510E+08	23.9	46.0	-22.0	32.9	32.0	2.2	20.8
8.020E+08	25.1	46.0	-22.0	33.0	32.0	2.3	21.8
9.992E+08	28.0	54.0	-30.0	32.9	30.9	2.6	23.4

Test Mode: Scanning Mode
Temp: 22.5C
Humidity: 45.7%

Note: Frequency range of investigation was 30 MHz to 10 GHz. Emissions above 1 GHz were at least 20 dB below the limit.

3.3 AC Line Conducted Emission Data

Not Applicable. The equipment is battery powered and does not contain an external power port.

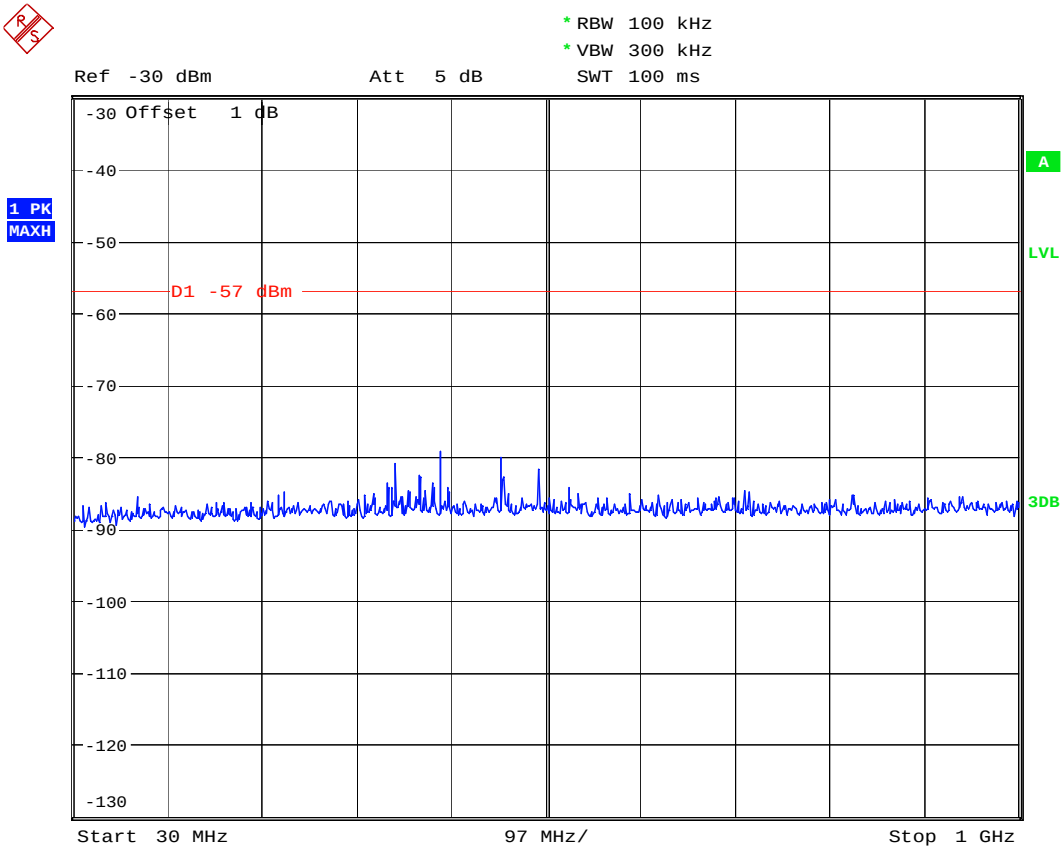
3.4 Antenna Conducted Emission Data

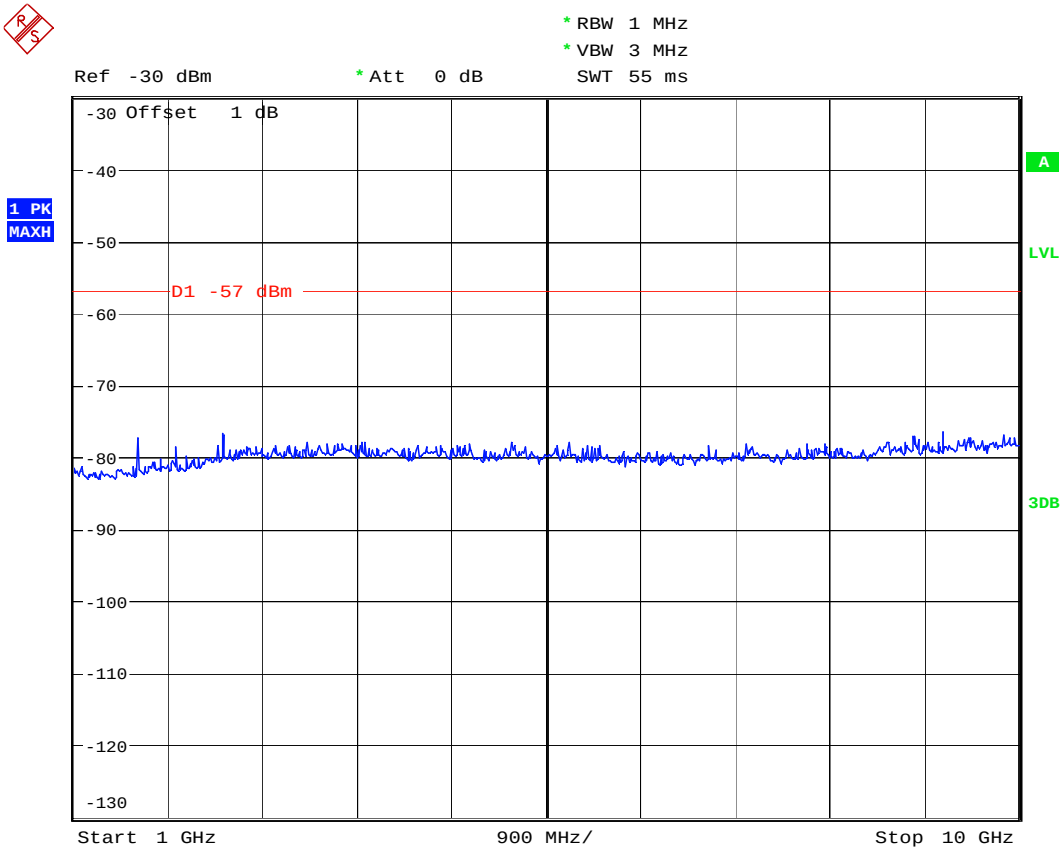
Tested By:	Ollie Moyrong
Test Date:	December 22, 2010

The results on the following page(s) were obtained when the device was tested in the condition described in Section 2.

Results:	**Complies**

Note: Tests were performed with the EUT operating in the low, middle and high channels. The worst-case emissions were detected in the low channel and are presented in this report.


*RBW 100 kHz
*VBW 300 kHz
Ref -30 dBm
Att 5 dB
SWT 100 ms
-30 Offset 1 dB
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
1 PK
MAXH
D1 -57 dBm
A
LVL
3DB
Start 30 MHz
97 MHz/
Stop 1 GHz


*RBW 1 MHz
*VBW 3 MHz
Ref -30 dBm
*Att 0 dB
SWT 55 ms
-30 Offset 1 dB
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
D1 -57 dBm
1 PK
MAXH
A
LVL
3DB
Start 1 GHz
900 MHz/
Stop 10 GHz

4.0 List of Test Equipment

Measurement equipment used for emission compliance testing utilized the equipment on the following list.

Equipment	Manufacturer	Model/Type	Serial #	Cal Int	Cal Due
RF Filter Section	Hewlett Packard	85460A	3448A00267	12	12/08/11
EMI Receiver	Hewlett Packard	8546A	3710A00373	12	12/08/11
BI-Log Antenna	ARA	LPB-2513/A	1154	12	06/29/11
Pre-Amplifier	Sonoma	310N	293620	12	11/02/11

Appendix A – Local Oscillator Frequency Calculation

FCC ID: ADV0602903

1 LOCAL OSC FREQUENCY CALCULATION

-1 FCC ID: ADV0602903 formula for 1st, 2nd and 3rd Local oscillation frequencies are as follow :

RECEIVING BAND (FR STEP)	FREQ. STEP (kHz)	RECEIVING FREQ. FR (MHz)	1st LOCAL PLL 1 /VCO 1 or VCO 2 (MHz)	2nd LOCAL PLL 2 /VCO 3 (MHz)	3rd LOCAL X' TAL (MHz)
VHF Low	10	25.0000 ~ 27.4050	A = (FR + 380.800) / 0.075	2nd Local = 1st IF - 21.4	20.9450
	5	27.4100 ~ 29.7000	= A.xxx (Cut away decimal)		
	10	29.7100 ~ 49.8300	1st Local = A x 0.075		
	5	49.8350 ~ 54.0000	1st IF = 1st Local - FR		
VHF High	8.33	108.0000 ~ 136.99166		2nd Local = 1st IF - 21.4	20.9450
	5	137.0000 ~ 137.9950			
	12.5	138.0000 ~ 143.9875			
	5	144.0000 ~ 147.9950	FR DENOTES Frequency Received.		
	12.5	148.0000 ~ 150.7875			
	5	150.8000 ~ 150.8450			
	7.5	150.8525 ~ 154.4975			
	5	154.5150 ~ 154.6400			
	7.5	154.6500 ~ 156.2550			
	25	156.2750 ~ 157.4500			
	7.5	157.4700 ~ 161.5725			
	5	161.6000 ~ 161.9750			
	12.5	162.0000 ~ 174.0000			
	5	216.0025 ~ 224.9950			
UHF Low	6.25	225.0000 ~ 316.54375		2nd Local = 1st IF - 21.4	20.9450
	〃	316.5500 ~ 316.79375	A = (FR + 380.700) / 0.075		
	〃	316.8000 ~ 337.89375	A = (FR + 380.800) / 0.075		
	〃	337.9000 ~ 338.09375	A = (FR + 380.700) / 0.075		
	〃	338.1000 ~ 359.29375	A = (FR + 380.800) / 0.075		
	〃	359.3000 ~ 359.49375	A = (FR + 380.700) / 0.075		
	〃	359.5000 ~ 379.99375	A = (FR + 380.800) / 0.075		
	12.5	380.0000 ~ 380.7125	〃		
	〃	380.7250 ~ 380.8000	A = (FR + 380.700) / 0.075		
	〃	380.8125 ~ 400.0000	A = (FR + 380.800) / 0.075		
	〃	400.0125 ~ 405.9750	A = (FR + 380.700) / 0.075		
	〃	405.9875 ~ 419.9875	A = (FR + 380.800) / 0.075		
	5	420.0000 ~ 450.0000	〃		
	6.25	450.00625 ~ 469.99375	〃		
	6.25	470.0000 ~ 512.0000	〃		
UHF High	3.125	764.0000 ~ 781.996875	A = (FR - 380.800) / 0.075	2nd Local = 1st IF - 21.4	20.9450
	〃	791.0000 ~ 796.996875	= A.xxx (Cut away decimal)		
	12.5	806.0000 ~ 823.9875	1st Local = A x 0.075		
	〃	849.0000 ~ 868.9875	1st IF = FR - 1st Local		
	〃	894.0000 ~ 939.9875			
	6.25	940.0000 ~ 960.0000			
	〃	1240.0000 ~ 1300.0000			

Appendix B – ADV0602903 Specification

See attached document: ADV0602903 Specification.