TEST REPORT

Report Number: 3179438MPK-001
Project Number: 3179438
June 8, 2009

Testing performed on the
Scanner
Model Number: ADV0828
FCC ID: ADV0828
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

Prepared by: **Date:** June 8, 2009

Marcos A. Rodriguez

Reviewed by: **Date:** June 8, 2009

Krishna K Vemuri

VERIFICATION OF COMPLIANCE
Report No. 3179438MPK-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:	Advanced Digital Hand Held Scanner
Trade Name:	GRECOM
Model No.:	ADV0828
Serial No.	000015
Applicant:	GRE America
Contact:	Mr. Teru Takahashi
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:	May 4 to June 8, 2009

We attest to the accuracy of this report:

Marcos A. Rodriguez
Senior EMC Project Engineer

Krishna K Kishore
Senior EMC Project Engineer

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1.0 General Description

1.1 Product Description

The Equipment under Test (EUT) is Advanced Digital Scanning Receiver, model ADV0828.

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

A pre-production version of the sample was received on May 18, 2008 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 (2003). 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: 0801
FCC ID: ADV0828

TEST	REFERENCE	RESULTS
Radiated Emission	15.109	Complies
AC Line Conducted Emission	15.107	Complies
Antenna Conducted Emission	15.111	Complies
FCC Part 15.121 Requirement	15.121	Complies *

* Refer to file: GRE ADV0828 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:

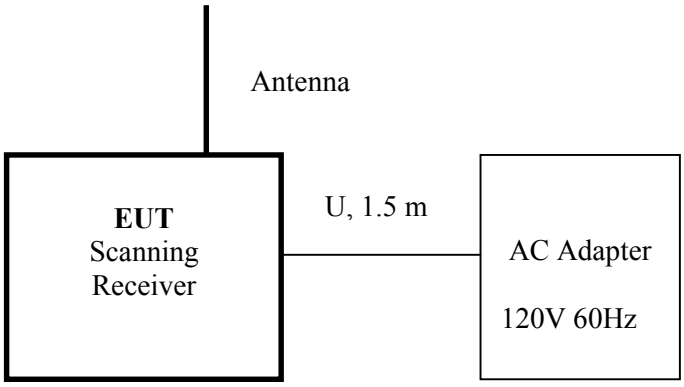
Test Mode 1: The EUT was set to constantly receive at the low, middle and high channels of each band.

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.
N/A Unit is Stand-alone device.			

2.5 Equipment Setup Block Diagram



U: Unshielded
m: meter

2.6 Equipment Modification

Any modifications installed previous to testing by GRE will be incorporated in each production model sold/leased in the United States.

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 8000 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:	Bruce Gordon & Marcos Rodriguez
Test Date:	May 4, 2009

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

Results:	**Complies** by 14.7dB

3.2 Test Data (Continued)

FCC Part 15.109 Class B Radiated Emissions Data

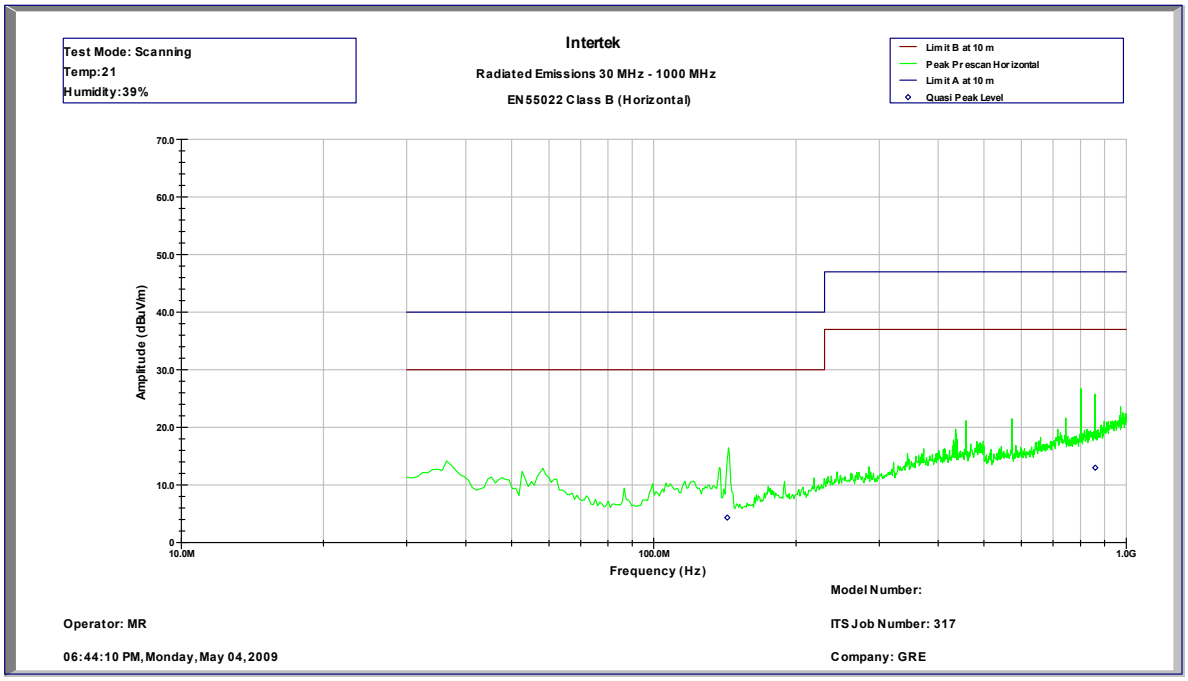
Model: ADV0828
Test Mode: Receiving at Tuned frequency
Test distance: 3 m

Tuned Frequency	L.O. Frequency	Antenna Polarization	Quasi-PK FS	Limit @3m	RA	AG	CF	AF	Margin
MHz	MHz	H/V	dB(uV/m)	dB(uV/m)	dB(uV)	dB	dB	dB(1/m)	dB
29.0	39.7	V	19.5	40.0	37.2	32.3	0.6	14.0	-20.5
41.5	52.2	V	7.9	40.0	28.1	32.2	0.7	11.3	-32.1
54.0	64.7	V	3.8	40.0	27.0	32.4	0.8	8.3	-36.2
87.3	98.0	V	7.6	43.5	28.6	32.7	1.0	10.6	-35.9
97.6	108.3	V	7.6	43.5	28.4	32.7	1.1	10.9	-35.9
107.9	118.6	V	15.2	43.5	34.1	32.6	1.1	12.6	-28.3
108.0	118.7	V	13.1	43.5	32.0	32.6	1.1	12.6	-30.4
122.4916	133.1916	V	19.7	43.5	39.4	32.8	1.2	11.9	-23.8
136.9916	147.6916	V	21.9	43.5	42.8	32.0	1.3	9.8	-21.6
137.0	126.3	V	19.2	43.5	38.1	32.7	1.2	12.6	-24.3
155.5	144.8	V	18.6	43.5	40.0	32.3	1.2	9.7	-24.9
174.0	163.3	V	28.8	43.5	49.2	31.9	1.3	10.1	-14.7
380.0	123.1	V	12.9	43.5	31.6	32.6	1.1	12.8	-30.6
446.0	145.1	V	12.6	43.5	34.0	32.3	1.2	9.7	-30.9
512.0	167.1	V	28.8	43.5	48.5	31.9	1.3	10.8	-14.7

Notes:
1. Negative signs (-) in the Margin column signify levels below the limit.
2. All readings below 1 GHz are quasi-peak, above 1 GHz – average.
3. All other readings not reported are at least 20 dB below the limit.
4. For L.O. frequency calculation, see Appendix A

3.2 Test Data (Continued)

Model: ADV0828
Test Mode: Scanning all channels
Test distance: 10 m



Intertek
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (QP-Horizontal)

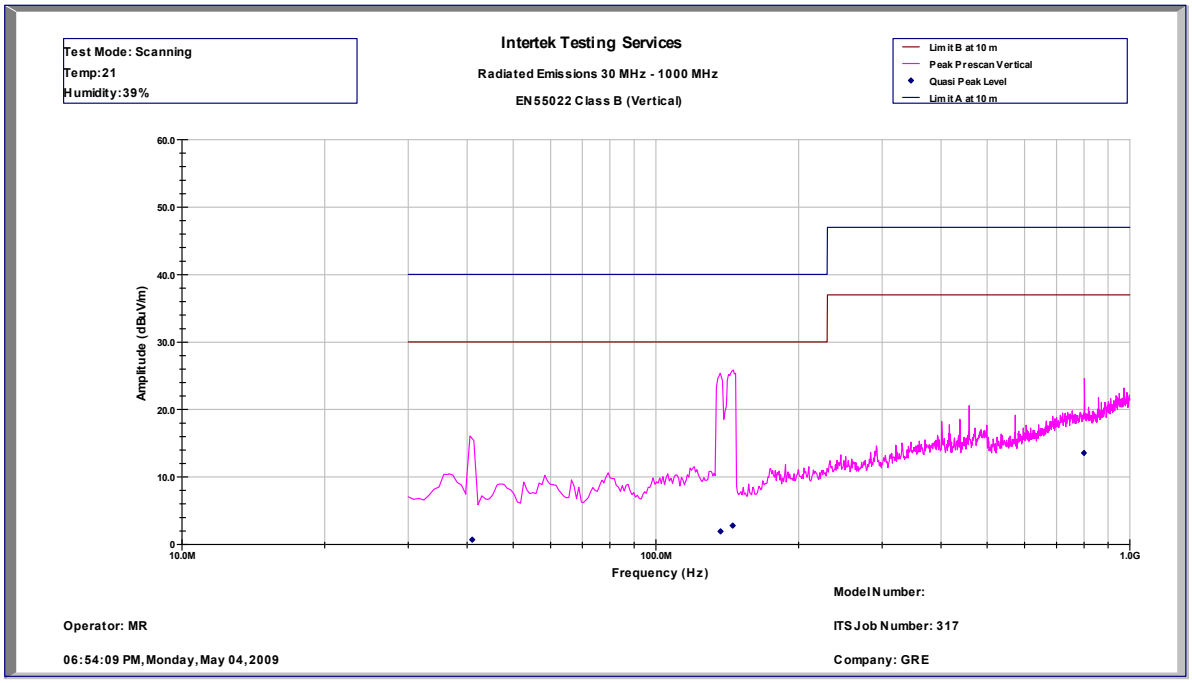
Operator: MR
Model Number: ADV0828
ITS Job Number: 3179438
06:44:10 PM, Monday, May 4, 2009
Company: GRE

Frequency	Quasi Pk FS	Limit@10m	Margin	RA	AG	AF	CF
MHz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
143.184	4.3	30.0	-25.7	25.6	31.9	9.4	1.2
860.175	13.0	37.0	-24.0	20.0	31.7	21.5	3.1

Test Mode: Scanning
Temp:21
Humidity:39%

3.2 Test Data (Continued)

Model: ADV0828
Test Mode: Scanning all channels
Test distance: 10 m



Intertek Testing Services
Radiated Emissions 30 MHz - 1000 MHz
EN55022 Class B (QP-Vertical)

Operator: MR
Model Number: ADV0828
ITS Job Number: 3179438
06:54:09 PM, Monday, May 4, 2009
Company: GRE

Frequency	Quasi Pk FS	Limit@10m	Margin	RA	AG	AF	CF
MHz	dB(uV/m)	dB(uV/m)	dB	dB(uV)	dB	dB(1/m)	dB
41.009	0.7	30.0	-29.3	18.4	32.0	13.7	0.6
136.899	1.9	30.0	-28.1	21.8	32.0	10.9	1.2
145.256	2.8	30.0	-27.2	23.8	31.9	9.7	1.2
800.049	13.6	37.0	-23.4	20.8	32.0	21.8	3.0

Test Mode: Scanning
Temp:21
Humidity:39%

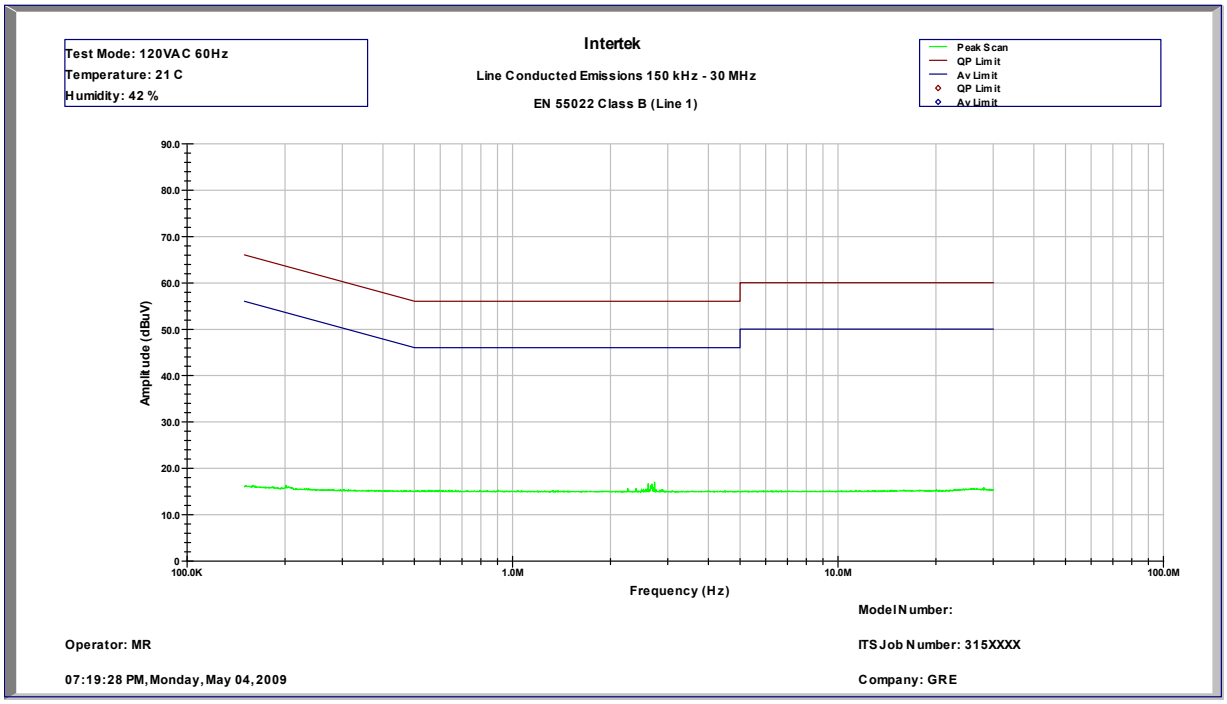
3.3 AC Line Conducted Emission Data

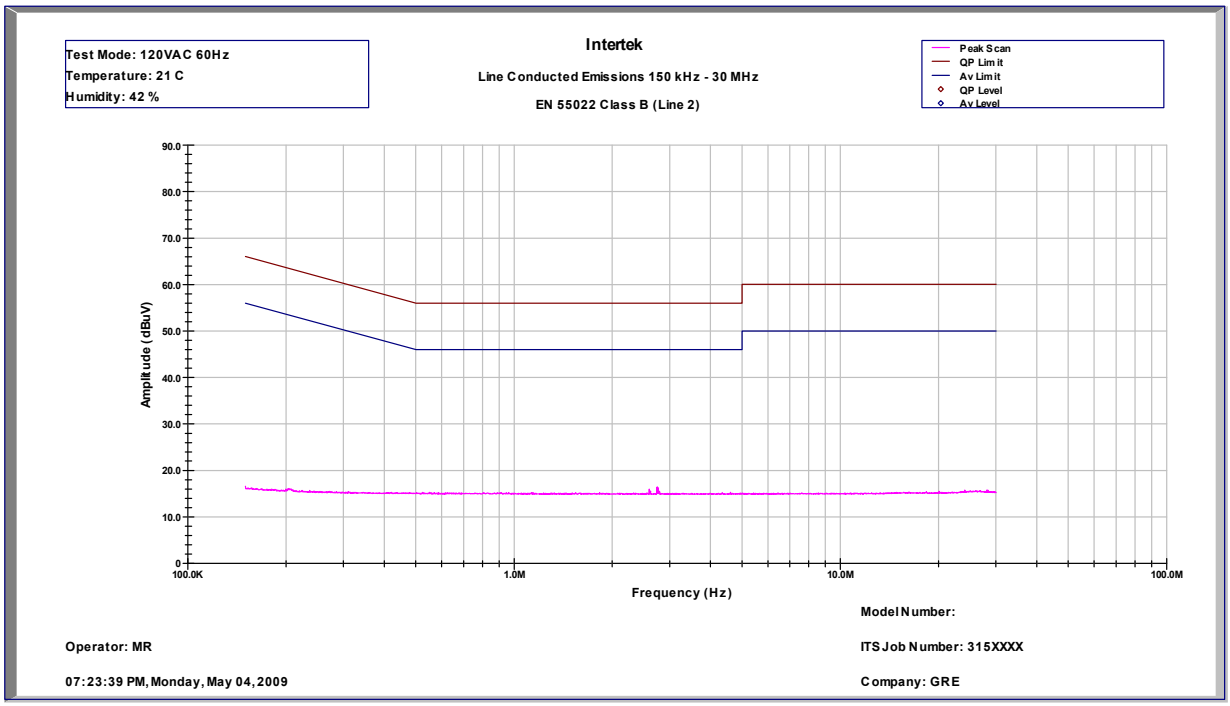
Tested By:	Marcos Rodriguez
Test Date:	May 4, 2009

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

Results:	**Complies** by 32.5 dB

3.3 Test Data (Continued)



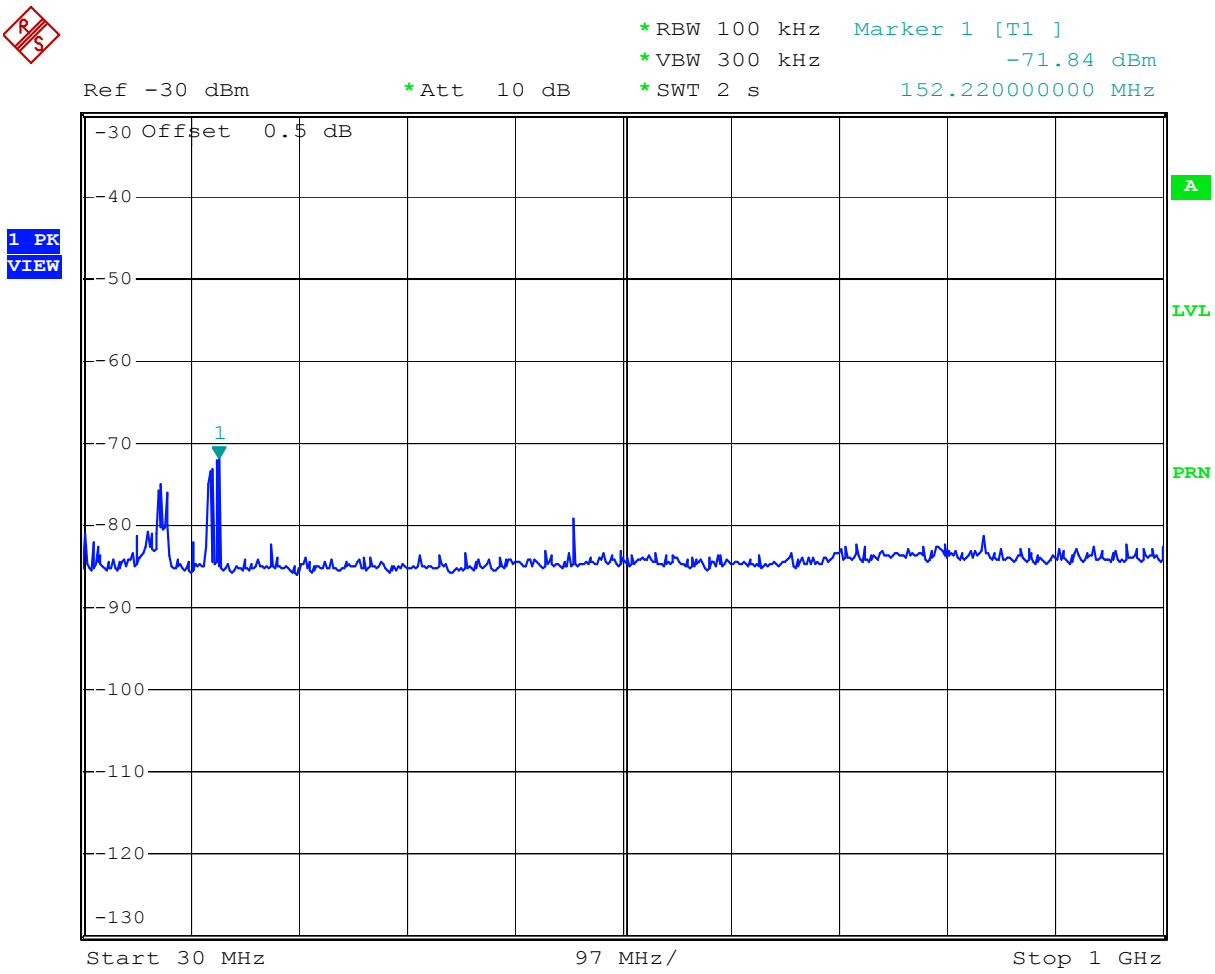


3.4 Antenna Conducted Emission Data

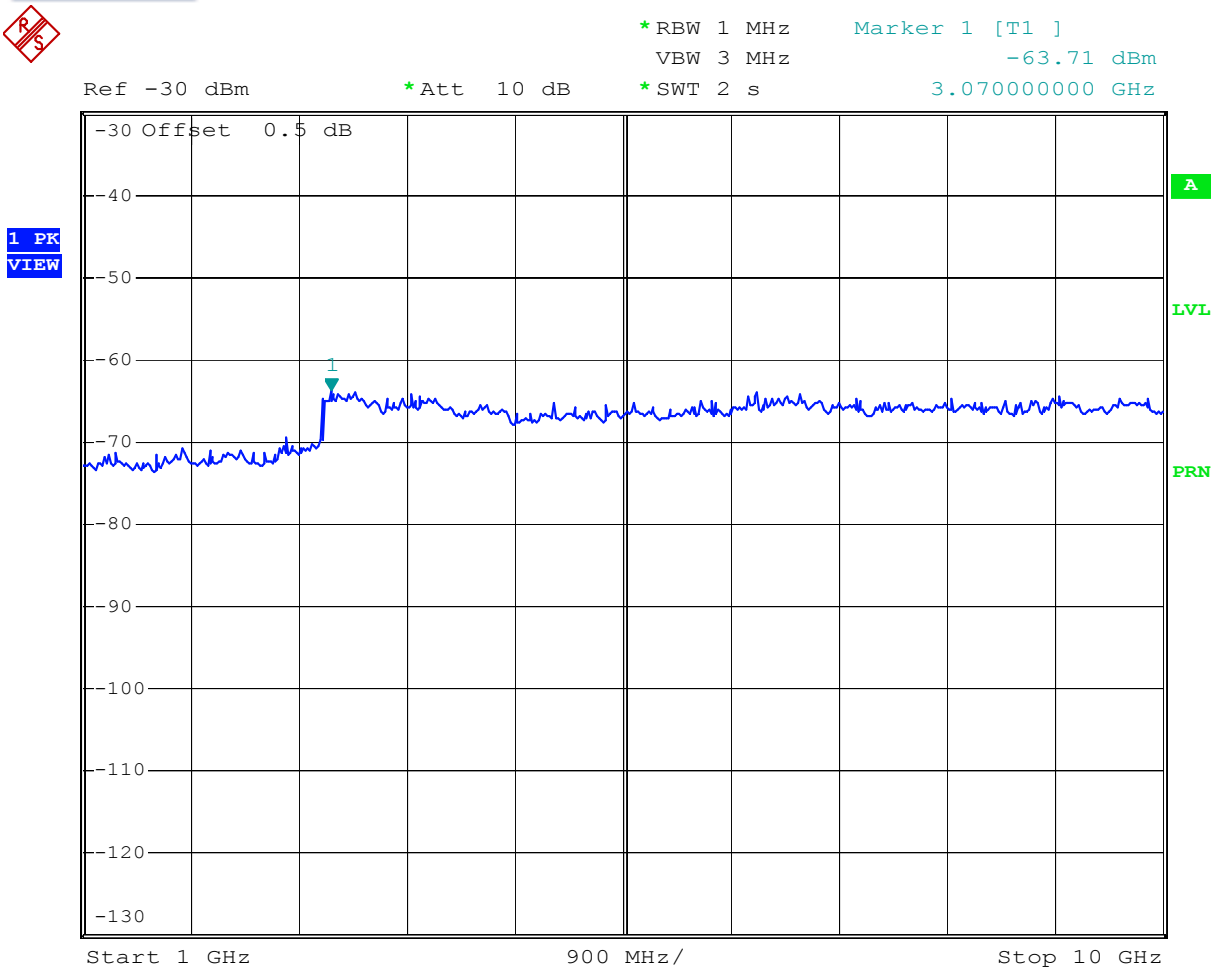
Tested By:	Bruce Gordon & Marcos Rodriguez
Test Date:	June 8, 2009

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

Results:	**Complies** by 13.7dB



Comment: In-band Unwanted Emissions, Channel Low
Date: 8.JUN.2009 17:51:25



Comment: In-band Unwanted Emissions, Channel Low
Date: 8.JUN.2009 17:54:26

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	10/01/09
EMI Receiver	Hewlett Packard	8546A	3710A00373	12	10/01/09
BI-Log Antenna	ARA	LPB-2513/A	1154	12	6/11/09
Pre-Amplifier	Sonoma	310N	185634	12	9/26/09
LISN	FCC	FCC-LISN-50-50-M-H	2011	12	9/19/09
Spectrum Analyzer	Rohde/Schwarz	FSP-40	100030	12	10/13/09

Appendix A – Local Oscillator Frequency calculation

GENERAL RESEARCH OF ELECTRONICS, INC.

How to calculate FCC ID: ADV0828 OSC Frequency

1. FCC ID: ADV0828 formula for 1st Local OSC are different due to frequency.

   -1 Receive Freq. at 29MHz – 54MHz (VHF Low Band)

   OSC Freq. (MHz) =Receive Freq. (MHz) + 10.7 (MHz)

   -2 Receive Freq. at 87.3MHz – 107.9MHz (FM Radio Band)

   OSC Freq. (MHz) =Receive Freq. (MHz) + 10.7 (MHz)

   -3 Receive Freq. at 108MHz – 136.9916MHz (AIR Band)

   OSC Freq. (MHz) =Receive Freq. (MHz) + 10.7 (MHz)

   -4 Receive Freq. at 137MHz – 174MHz (VHF Hi Band)

   OSC Freq. (MHz) =Receive Freq. (MHz) - 10.7 (MHz)

   -5 Receive Freq. at 380MHz – 512Hz (UHF Low Band)

   OSC Freq. (MHz) ={Receive Freq. (MHz) - 10.7 (MHz)}/3

Appendix B – ADV0828 Specification

See attached document ADV0828 Specification.