APPLICATION FOR FCC CERTIFICATION
For
Radio Shack Corp.

Scanning Receiver
Model: 20-424 (PRO-2018)
FCC ID: AAO2000424

Job # 3023503
Report # 30235031

Date of Testing: April 9 – 10 and May 13 - 15, 2002
Date of Report: May 17, 2002

Number of Pages: 26

The results contained in this report were derived from measurements performed on the identified test samples. Any implied performance of other samples on this report is dependent on the representative of the samples tested.

NVLAP Laboratory Code: 200201-0

Table of Contents

AUTHORIZATION LETTER

See attachment.

ATTESTATION LETTER TO FCC §15.121

See attachment.

TEST REPORT

0.0 Summary of Test Results

GRE America - Model: 20-424 (PRO-2018)
FCC ID: AAO2000424

TEST	REFERENCE	RESULTS
Radiated Emission	15.109	Complies
Conducted Emission	15.107	Complies

We attest to the accuracy of this report:

Arkadi Kaplan
Test Engineer

Ollie Moyrong
EMC Manager

Review Date: _____

1.0 General Description

1.1 Product Description

The General Research of Electronics, Inc. Model No.: 20-424 (PRO-2018) is a scanning receiver used to listen to police and fire departments, ambulance services, government agencies, private companies, amateur radio services, aircraft and military operations.

Please refer to the attached specifications sheets for more details.

A pre-production version of the sample was received on April 8, 2002 in good condition.

1.2 Related Submittal(s) Grants

This is an Application for Certification of a scanning receiver.

1.3 Test Methodology

Both AC mains line-conducted (if applicable) and radiated emission measurements were performed according to the procedures in ANSI C63.4 (1992). All measurements were performed in a semi-anechoic chamber. All 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. This test facility and site measurement data have been fully placed on file with the FCC.

2.0 System Test Configuration

2.1 Justification

The tests were performed according to the test procedure as outlined in CFR47 Part 15.31(m) and in ANSI C63.4 Section 12.1.

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).

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. Detector function is in peak mode. 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 and the worst case emission was recorded:

Test Mode 1: The EUT was set to constantly receive at a particular frequency (1 near the top, 1 near the middle, and 1 near the bottom of each band).

Test Mode 2: The EUT was set to constantly scan and receive a particular band.

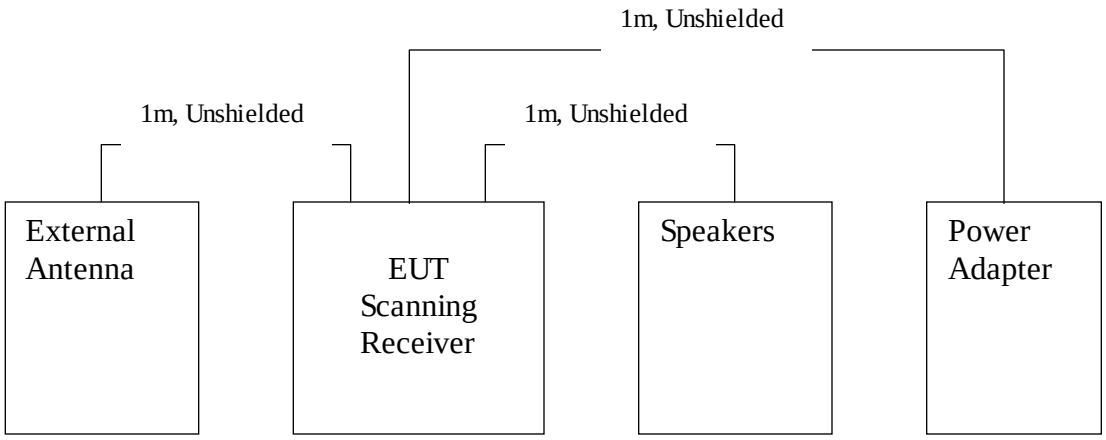
2.4 Support Equipment List and Description

None

2.4.1 The FCC ID's for all equipment used in the tested system (included inserted cards, which have grants) are:

Not Applicable

2.4.2 Equipment Setup Block Diagram



2.5 Equipment Modification

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

No modifications were installed by Intertek Testing Services.

3.0 Emission Results

AC line conducted emission measurements were performed from 0.45 MHz to 30 MHz. Analyzer resolution is 10 kHz or greater.

Radiated emission measurements were performed from 30 MHz to 5000 MHz. Analyzer resolution is 100 kHz or greater for 30 MHz to 1000 MHz, 1 MHz for >1000 MHz.

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs 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 dBµV/m
RA = Receiver Amplitude (including preamplifier) in dBµV
CF = Cable Attenuation Factor in dB
AF = Antenna Factor in dB
AG = Amplifier Gain in dB
DF = Distance Factor

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:

FS = RR + LF

Where FS = Field Strength in dµV/m
RR = RA - AG in dBµV
LF = CF + AF + DF in dB

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

RA = 52.0 dBµV DF = 0 dB
AF = 7.4 dB RR = 23.0 dBµV
CF = 1.6 dB LF = 9.0 dB
AG = 29.0 dB
FS = RR + LF
FS = 23 + 9 = 32 dBµV/m

Level in µV/m = Common Antilogarithm [(32 dBµV/m)/20] = 39.8 µV/m

3.2 Radiated Emission Configuration Photograph

See file attachment titled **Test Setup Photos AAO2000424.**

3.3 Radiated Emission Data

Tested By:	Arkadi Kaplan
Test Date:	April 9, 2002

Temperature	**(°C)**	21.2
Relative Humidity	**(%)**	47.8

The results on the following page(s) were obtained when the device was tested in the condition described in Section 4.

Results:	**Complies** by 14.7 dB at 137.0 MHz (Tuned frequency 126.3 MHz, L.O. Frequency)

All other emissions are at least 20 dB below he limits.

Radiated Emission Data

Job No.: J83023503
Company: GRE America
Model: 20-424 (PRO-2018)
Test Mode: Rx
Engineer: Arkadi Kaplan
Date: April, 09 2002

FCC Part 15.109 Class B Radiated Emissions

Tuned Frequency (MHz)	L.O. Frequency (MHz)	Antenna Location (m)	Antenna Polarization H/V	Receiver Reading (dBuV)	Antenna Factor (dB/m)	Preamp (dB)	Cable Loss (dB)	Corrected Reading (dBuV/m)	Limit At 3 m (dBuV/m)	Margin (dB)
29.000	39.700	3.0	V	15.9	6.1	25.3	3.5	-8.6	40.0	-40.4
41.500	52.200	3.0	V	17.1	4.6	25.2	3.6	-9.1	40.0	-39.9
54.000	64.700	3.0	V	19.6	5.4	25.3	3.8	-7.5	40.0	-36.6
108.000	118.700	3.0	V	26.9	5.2	25.2	4.4	-1.6	43.5	-32.2
122.500	133.200	3.0	V	30.1	6.2	25.1	4.5	-1.3	43.5	-27.8
136.988	147.688	3.0	V	27.9	11.1	25.0	4.5	2.7	43.5	-25.0
137.000	126.300	3.0	V	42.4	6.9	25.2	4.5	7.6	43.5	-14.7
155.500	144.800	3.0	V	35.4	11.0	25.0	4.5	17.7	43.5	-17.6
174.000	163.300	3.0	V	38.5	8.7	25.0	4.6	14.7	43.5	-16.7
380.000	123.100	3.0	V	25.4	7.5	25.2	4.4	-3.8	43.5	-31.4
446.000	145.100	3.0	V	25.1	11.0	25.0	4.5	2.0	43.5	-27.9
512.000	167.100	3.0	V	38.5	8.6	25.0	4.6	0.4	43.5	-16.8

Notes: Negative signs (-) in the Margin column signify levels below the limit.
All readings are peak measurements.

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3.4 AC conducted Emission Configuration Photograph

See file attachment titled **Test Setup Photos AAO2000424**

3.5 Conducted Emission Data

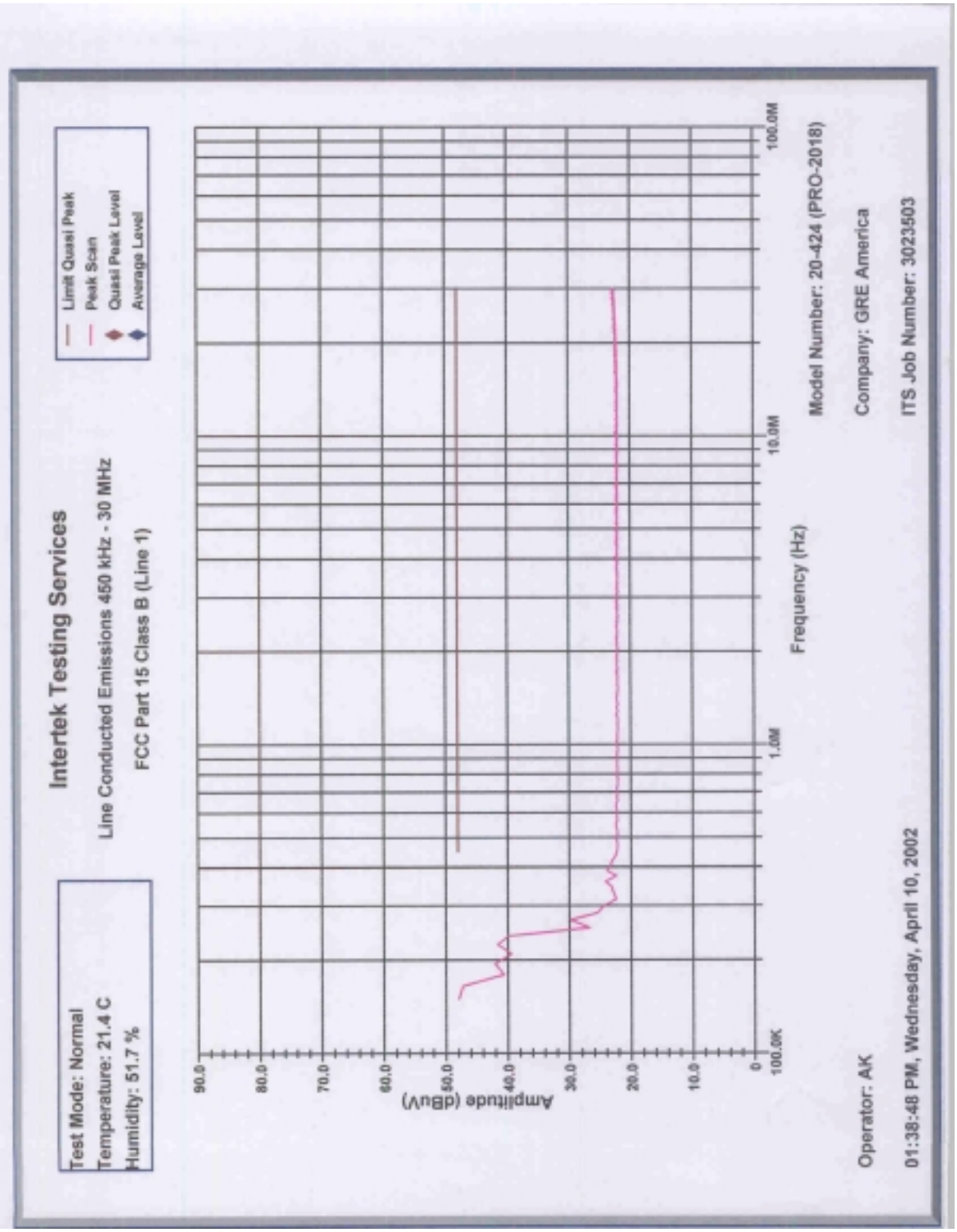
Tested By:	Arkadi Kaplan
Test Date:	April 10, 2002

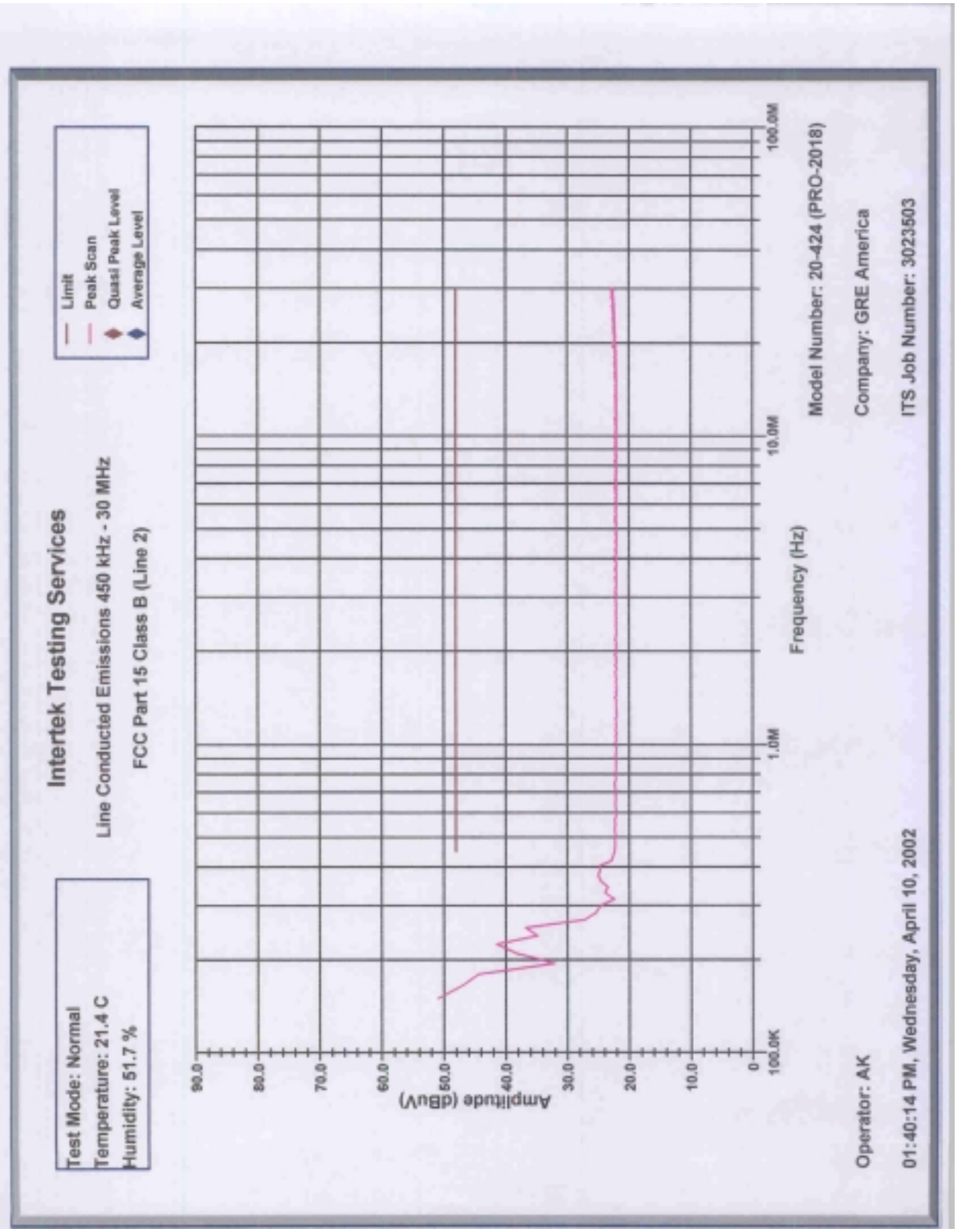
Temperature (°C)	21.4
Relative Humidity (%)	51.7

The results on the following page(s) were obtained when the device was tested in the condition described in Section 4.

Results:	**Complies** by 25.0 dB at 0.45 MHz

Conducted Emission Data




Intertek Testing Services
Line Conducted Emissions 450 kHz - 30 MHz
FCC Part 15 Class B (Line 2)
Limit
Peak Scan
Quasi Peak Level
Average Level
Test Mode: Normal
Temperature: 21.4 C
Humidity: 51.7 %
Amplitude (dBuV)
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0
100.0K
1.0M
10.0M
100.0M
Frequency (Hz)
Model Number: 20-424 (PRO-2018)
Company: GRE America
ITS Job Number: 3023503
Operator: AK
01:40:14 PM, Wednesday, April 10, 2002

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	USED
BI-Log Antenna #1	EMCO	3143	9509-1164	12	3/04/03	X
Pre-Amplifier	Sonoma Inst.	310	185634	12	01/10/03	X
RF Filter Section	Hewlett Packard	85460A	3448A00267	12	7/20/02	X
EMI Receiver	Hewlett Packard	8546A	3710A00373	12	7/20/02	X
LISN	FCC	FCC-LISN-50-50-M-H	2012	12	1/04/03	X
Attenuator	Narda	757C	00433	12	12/01/02	X

5.0 Antenna Requirement

The antenna is affixed to the EUT using a unique connector, which that allows for replacement of a broken antenna, the EUT does use a standard antenna jack or electrical connector.

6.0 Equipment Photographs

See attachment.

7.0 Product Labeling

7.1 Label Artwork

See attachment.

7.2 Label Location

See attachment.

8.0 Technical Specifications

8.1 Receiver Block Diagram

See attachment.

8.2 Receiver Circuit Diagram

See attachment.

9.0 Instruction Manual

See attachment.

10.0 Document History

Revision/ Job Number	Writer Initials	Date	Change
1.0 / 30235031	SS	April 15, 2002	Original document