

APPLICATION FOR FCC CERTIFICATION
For
Click2Enter

Scanner/Receiver
Model: C2E-1.0
FCC ID:

Job # J20016531
Report #J20016531a

Date of Testing: June 2000
Date of Report: June 30, 2000

Number of Pages: 19 + data pages

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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.



Table of Contents

AUTHORIZATION LETTER	1
ATTESTATION LETTER TO FCC '15.121	2
TEST REPORT.....	3
0.0 Summary of Test Results.....	3
1.0 General Description.....	4
1.1 Product Description	4
1.2 Related Submittal(s) Grants	4
1.3 Test Methodology	4
1.4 Test Facility.....	4
2.0 System Test Configuration.....	5
2.1 Justification	5
2.2 EUT Exercising Software.....	5
2.3 Support Equipment List and Description.....	6
2.4 Equipment Modification	6
3.0 Emission Results.....	7
3.1 Field Strength Calculation.....	8
3.2 Radiated Emission Configuration Photograph	9
3.3 Radiated Emission Data	10
3.4 AC conducted Emission Configuration Photograph	11
3.5 Conducted Emission Data.....	12
4.0 Antenna Requirement	13
5.0 Equipment Photographs	14
6.0 Product Labeling.....	15
6.1 Label Artwork.....	15
6.2 Label Location	16
7.0 Technical Specifications	17
7.1 Receiver Block Diagram	17
7.2 Receiver Circuit Diagram	18
8.0 Instruction Manual.....	19

AUTHORIZATION LETTER

Please see attached page

ATTESTATION LETTER TO FCC '15.121

Please see attached page.

Click2Enter

Date of Test: June 2000

TEST REPORT**0.0 Summary of Test Results**

Click2Enter - Model: C2E-1.0
FCC ID:

TEST	REFERENCE	RESULTS
Radiated Emission	15.109	Complies
Conducted Emission	15.107	Complies

We attest to the accuracy of this report:



Barry Smith
Test Engineer



David Chernomordik
EMC Site Manager

1.0 General Description

1.1 Product Description

The Click2Enter. Model No.: C2E-1.0 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 users manual for more details.

A pre-production version of the sample was received on September 13, 1999 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 Open Area Test Sites. 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 open area 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

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 attached to a cardboard box (if necessary) and placed on the wooden turntable. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). The EUT is wired to transmit full power without modulation.

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

For emissions testing, the units were 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:

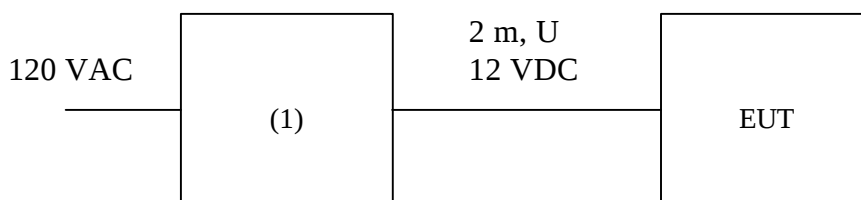
1. EUT was set to constantly receive at a particular frequency.
2. EUT was set to constantly scan and receive a particular band.

2.3 Support Equipment List and Description

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

Item #	Description	Model No.	Serial No.	FCC ID
1	GRE Power Adaptor	AM-121000	N/A	N/A

- b) Equipment Setup Block Diagram



* = EUT	S = Shielded;	F = With Ferrite
** = No ferrites on video cable	U = Unshielded	

2.4 Equipment Modification

Any modifications installed previous to testing by Radio Shack, A Division of Tandy Corporation 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 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

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 dB μ V/m

RR = RA - AG in dB μ V

LF = CF + AF + DF in dB

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.

$$RA = 52.0 \text{ dB}\mu\text{V}$$

$$DF = 0 \text{ dB}$$

$$AF = 7.4 \text{ dB}$$

$$RR = 23.0 \text{ dB}\mu\text{V}$$

$$CF = 1.6 \text{ dB}$$

$$LF = 9.0 \text{ dB}$$

$$AG = 29.0 \text{ dB}$$

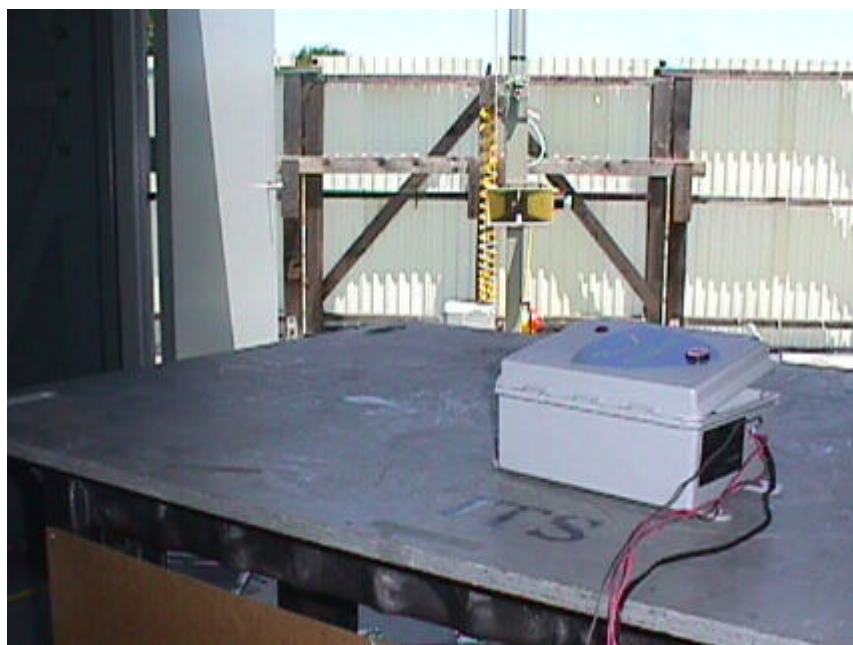
$$FS = RR + LF$$

$$FS = 23 + 9 = 32 \text{ dB}\mu\text{V/m}$$

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

3.2 Radiated Emission Configuration Photograph

Worst Case Radiated Emission
at 952 MHz



3.3 Radiated Emission Data

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Judgement: Passed by 3.6 dB

**Radiated Emissions
Test Data**

Company:	GRE America	Model #:	Standard	FCC § 15.209
EUT:	Click 2 Enter Scanner	S/N #:	Limits	3
Project #:	J20016531	Test Date:	Test Distance	3 meters
Test Mode:	Normal	Engineer:	Duty Relaxation	0 dB

Number:	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used	
	1	2	8	5	8	0	9	0	0	0	
Model:	EMCO 3143	EMCO 3143	EMCO 3115	CDI_P950	CDI_P1000	None	NPS258-1	None	None	None	None

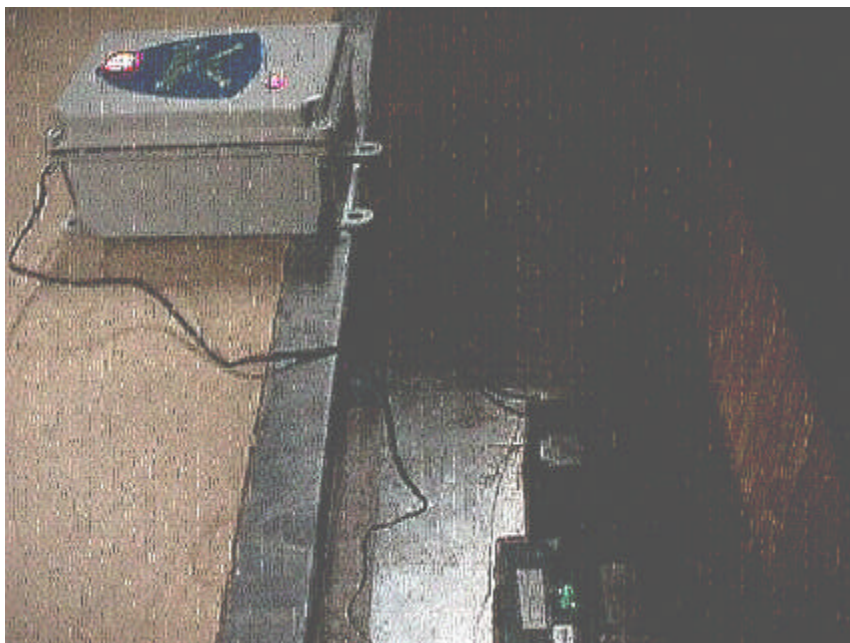
Tuned Freq	LO Freq	Reading	Detector	Ant	Ant. Pol	Ant. Factor	Pre-Amp	Insert. Loss	D.C.F.	Net	Limit @3m	Margin
MHz	MHz	dB(μV)	P/A/Q	#	H/V	dB(1/m)	dB	dB	dB	dB(μV/m)	dB(μV/m)	dB
29	286.5	20.8	Peak	1	H	13.0	0.0	0.8	0.0	34.6	46.0	-11.4
29	278.9	40.3	Peak	7	H	14.9	19.2	3.1	0.0	39.1	46	-6.9
39.5	297.0	18.0	Peak	1	H	13.5	0.0	0.8	0.0	32.3	46.0	-13.7
54	311.5	17.9	Peak	1	H	13.6	0.0	0.9	0.0	32.4	46.0	-13.6
108	365.5	17.7	Peak	1	H	15.7	0.0	1.1	0.0	34.5	46.0	-11.5
122.5	380.0	18.7	Peak	1	H	15.7	0.0	1.1	0.0	35.5	46.0	-10.5
136.975	394.48	16.6	Peak	1	H	15.8	0.0	1.1	0.0	33.5	46.0	-12.5
137	394.5	17.2	Peak	1	H	15.8	0.0	1.1	0.0	34.1	46.0	-11.9
154	411.4	19.6	Peak	1	V	15.7	0.0	1.0	0.0	36.3	46.0	-9.7
174	431.5	20.6	Peak	1	V	16.4	0.0	1.0	0.0	38.0	46.0	-8.0
380	637.5	19.3	Peak	1	V	18.9	0.0	1.1	0.0	39.3	46.0	-6.7
440	697.5	19.9	QP	1	V	19.8	0.0	1.4	0.0	41.1	46.0	-4.9
512	769.5	11.4	Peak	1	V	21.0	0.0	1.2	0.0	33.6	46.0	-12.5
806	552.0	26.7	Peak	7	V	18.0	15.6	4.6	0.0	33.7	46.0	-12.3
815	557.5	28.4	Peak	7	V	18.0	15.6	4.6	0.0	35.4	46.0	-10.6
849	591.5	33.7	Peak	7	V	18.5	15.6	4.6	0.0	41.2	46.0	-4.8
859	601.5	32.8	Peak	7	V	18.8	15.0	5.1	0.0	41.7	46.0	-4.3
894	636.5	32.9	Peak	7	V	19.4	15.0	5.1	0.0	41.9	46.0	-4.1
926	668.5	29.9	Peak	7	V	20.4	14.0	5.6	0.0	41.9	46.0	-4.1
952	695.0	30.0	QP	7	V	20.8	14.0	5.6	0.0	42.4	46.0	-3.6

Notes:

- D.C.F.: Distance Correction Factor
- Insert. Loss (dB) = Cable A + Cable B + Cable C
- Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss - Transducer Loss - Duty Relaxation (transm only)
- Negative signs (-) in Margin column signify levels below the limits.
- All other emissions not reported are below the equipment noise floor which is at least 20 dB below the limits.

3.4 AC conducted Emission Configuration Photograph

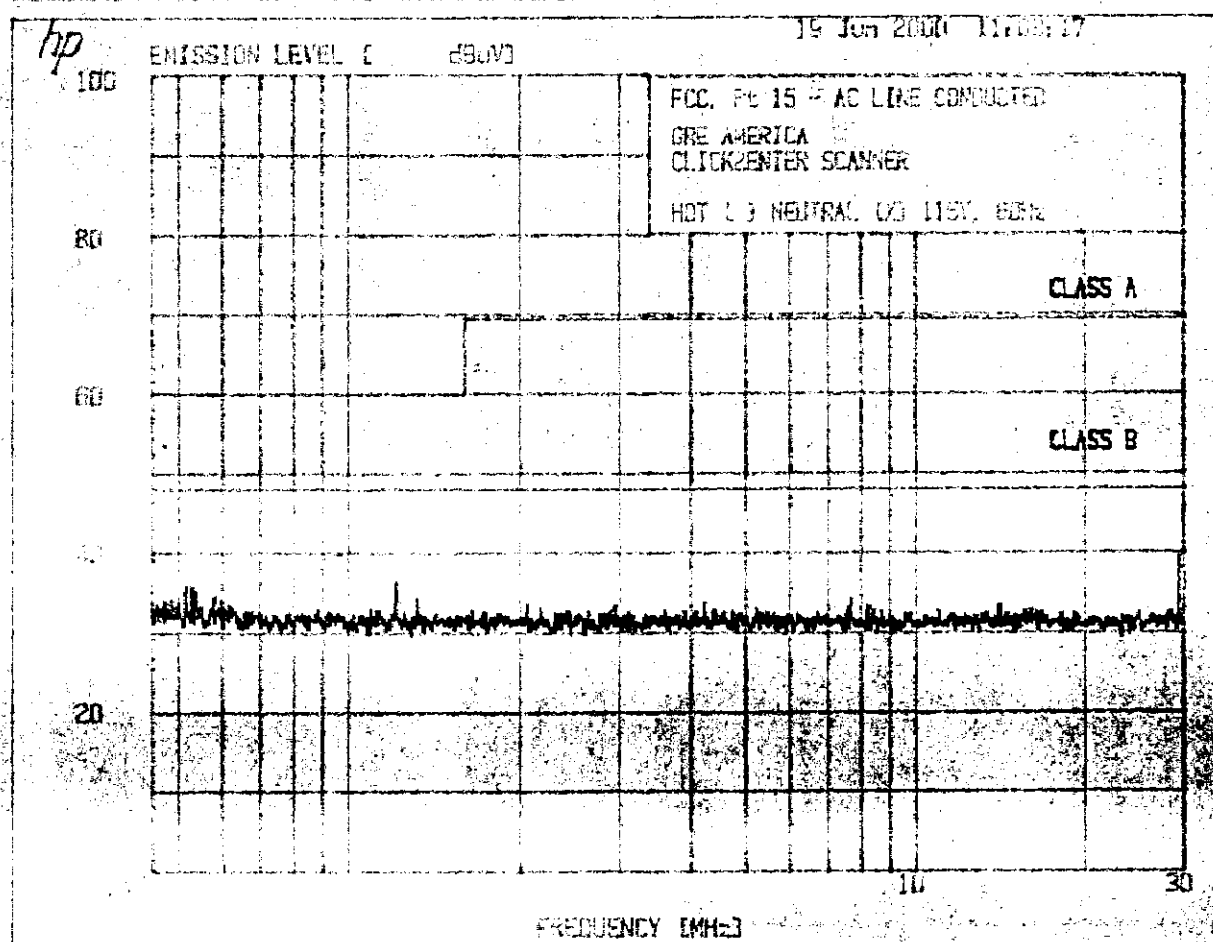
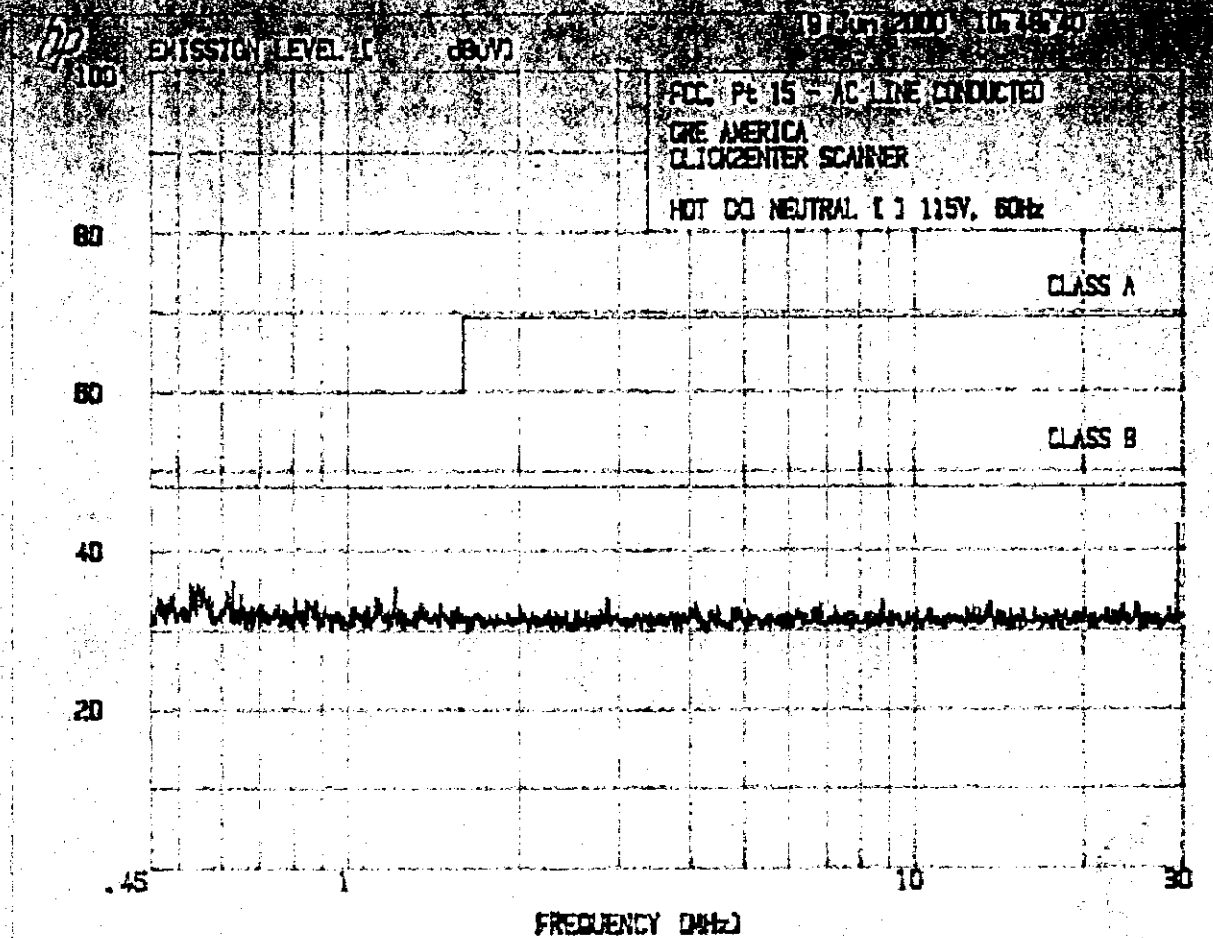
Worst Case Conducted Emission
at 29.5 MHz



3.5 Conducted Emission Data

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Judgement: Passed by 4.7 dB



4.0 Antenna Requirement

The BNC connector inside the ETU is for manufacturer test use only. The EUT is equipped with a 2 inch wire for permanent Ant use. This Ant is located inside EUT.

5.0 Equipment Photographs

Photographs of the EUT are attached.

6.0 Product Labeling**6.1 Label Artwork**

An engineering drawing of the label that will be permanently affixed to the unit is attached. This label will be attached to the unit at the location shown in Section 6.2.

Click2Enter

Date of Test: June 2000

6.2 Label Location

See attached page.

Click2Enter™

MODEL : C2E-1.0

MONITOR RECEIVER / ACTUATOR

Freq: 29-54, 137-174, 380-512, 806-824, 849-869, 894-960 MHz

Power Supply: 12-30 VDC / 12-24 VAC

Warning: Modification of this device to receive cellular radio
telephone service signals is prohibited under FCC rules and
Federal Law.

FCC ID : 07CC2E10

S/N :

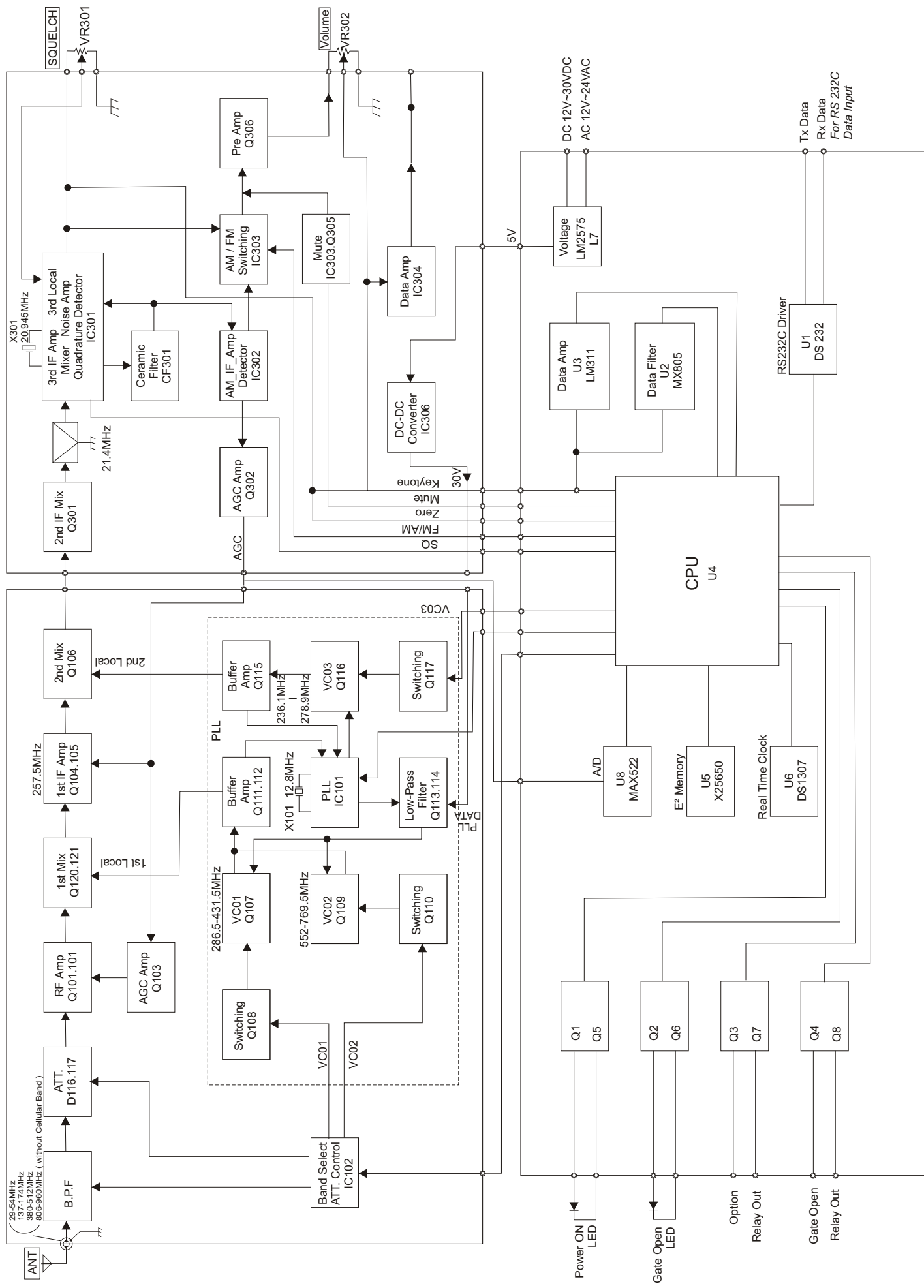
Click2Enter, Inc. in Sonoma, CA USA
"Made in USA "

U.S. Patent's: 5,903,216 & 5,955,947
Foreign Patents Pending

7.0 **Technical Specifications**

7.1 Receiver Block Diagram

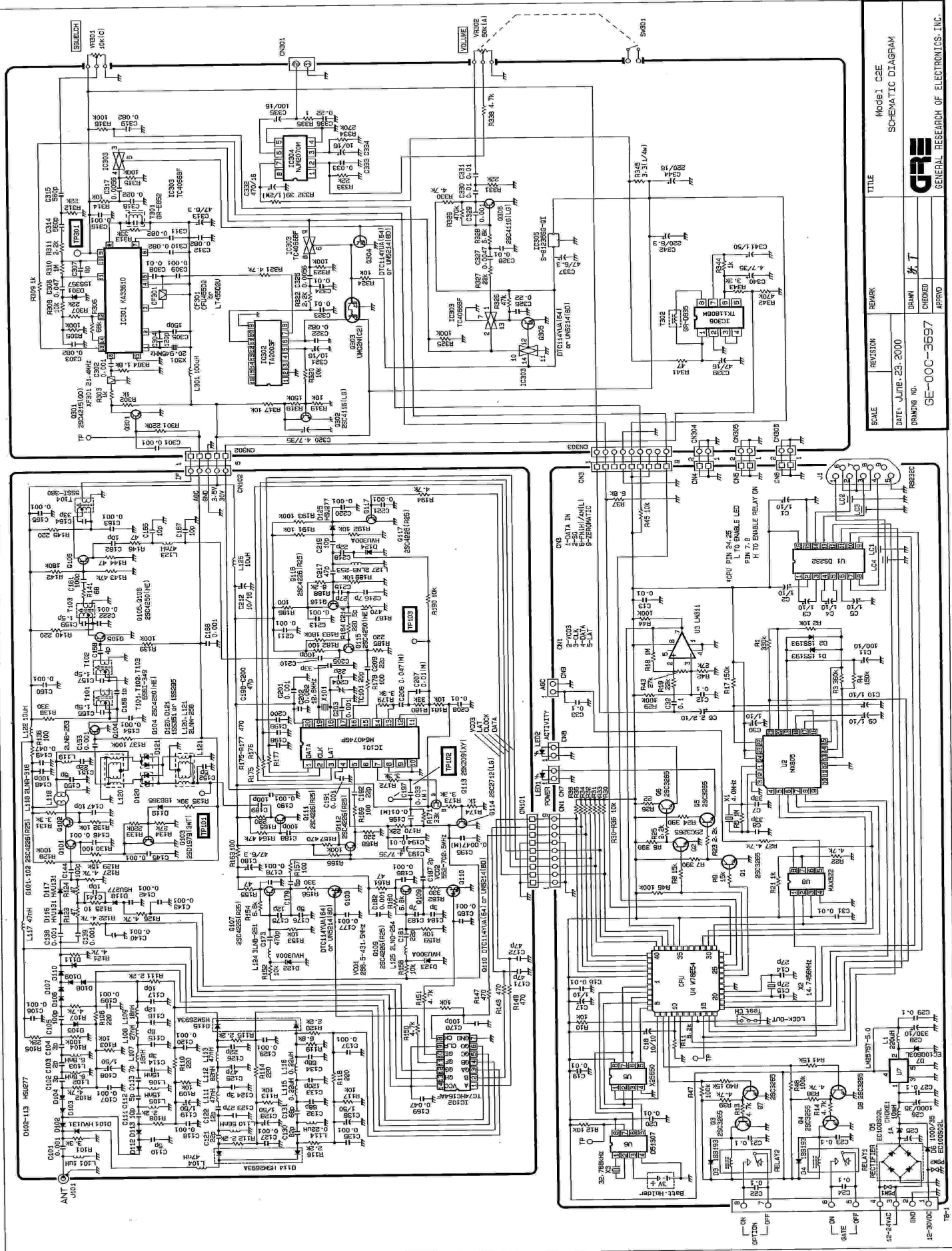
See attached page.



C2E BLOCK DIAGRAM

7.2 Receiver Circuit Diagram

See attached page.



Circuit function of the device per section

RF section

Q101,101	RF Amplifier
Q103	Bias for Q101
Q104,105	1 st IF Amplifier
Q106	2 nd Mixer
Q107	VCO 1 for VHF
Q108	Switching for Q107
Q109	VCO 2 for UHF
Q110	Switching for Q109
Q111,112	Buffer for VCO1,2 (VHF and UHF)
Q113,114	Low pass filter for VCO loop
Q115	Buffer for VCO3
Q116	VCO 3 for 2 nd IF
Q117	Switching for Q116
D120,121	1 st Mixer
IC101	PLL
IC102	Band selects and attenuates

IF section

Q301	2 nd IF Amplifier for FM Modulation
Q302	2 nd IF Amplifier for AM Modulation (option)
Q303,304	Switching
Q305,306	Low pass filter and switching
IC301	3 rd IF Amplifier, 3 rd LO, 3 rd MIX, Noise AMP, Quadrature detector
IC302	3 rd IF for AM modulation (option)
IC304	Audio Amplifier for Factory TEST
IC303	Switching
IC305	Voltage regulator
IC306	DC to DC converter

CPU section

U1	RS232C driver for configuer CPU
U2	Tone decoder and digital filter
U3	Data Amplifier
U4	CPU
U5	EE ROM
U6	Real Clock timer
U7	Voltage Regulator
U8	D to A converter

Q1,2,5,6

Q3,7

Q4,8

Driver for LED

Driver for Relay

Driver for Relay

8.0 **Instruction Manual**

Attached is a preliminary copy of the Instruction Manual.

This manual will be provided to the end-user with each unit sold/leased in the United States.