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APPLICANT: SKC SHIN CHANG ELECTRONICS CO.

FCC ID: 028ST-2050F

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GENERAL INFORMATION REQUIRED
FOR TYPE ACCEPTANCE

2.1033(c)(1)(2) SKC SHIN CHANG ELECTRONICS CO. will sell the
FCCID: O28ST-2050F CITIZENS BAND Radio
Control transmitter in quantity, for use
under FCC RULES PART 95 SUBPART C.

SKC SHIN CHANG ELECTRONICS CO.
334-7, KAJWA-DONG
SEO-KU, INCHON
KOREA

2.1033(c)(3) Instruction manual is included as Exhibit# 5.

2.1033 (4) Type of Emission: 9K2F1D
95.627(c)(1)

Bn = 2M + 2DK
M = 4,800 Bits per second
D = 2.2KHz (Peak Deviation)
K = 1
Bn = $2(4800/2) + 2(2.2K)(1) = 4.8K + 4.4K = 9.2k$
ALLOWED AUTHORIZED BANDWIDTH = 20.00KHz.

95.631(b) Authorized Bandwidth 20KHz for F1D

2.1033(c)(5) Frequency Range: 72-73 MHz
95.623(a)

(6) Power Range and Controls: There are NO user Power
controls.

(7) Maximum Output Power Rating: 120 milli Watts ERP.

(8) DC Voltages and Current into Final Amplifier:

FINAL AMPLIFIER ONLY

Vce = 12.6Volts DC
Ice = 0.039A.
Pin = 0.5Watts

2.1033(c)(9) Tune-up procedure. The tune-up procedure is included
as Exhibit 8 of this report.

2.1033(c)(10) Complete Circuit Diagrams: The circuit diagram is
included as part of Exhibit # 4. The block
diagram is included as Exhibit #3 of this report.

(6) Function of each electron tube or semiconductor
device or other active circuit device:
See Exhibit 6.

2.1033(c)(11) The Equipment identification is shown as
Exhibit #1A.

2.1033(c)(12) Photographs of the equipment are shown as Exhibits No. 2A-2D.

2.1033(c)(12) Equipment employing Digital modulation. N/A.

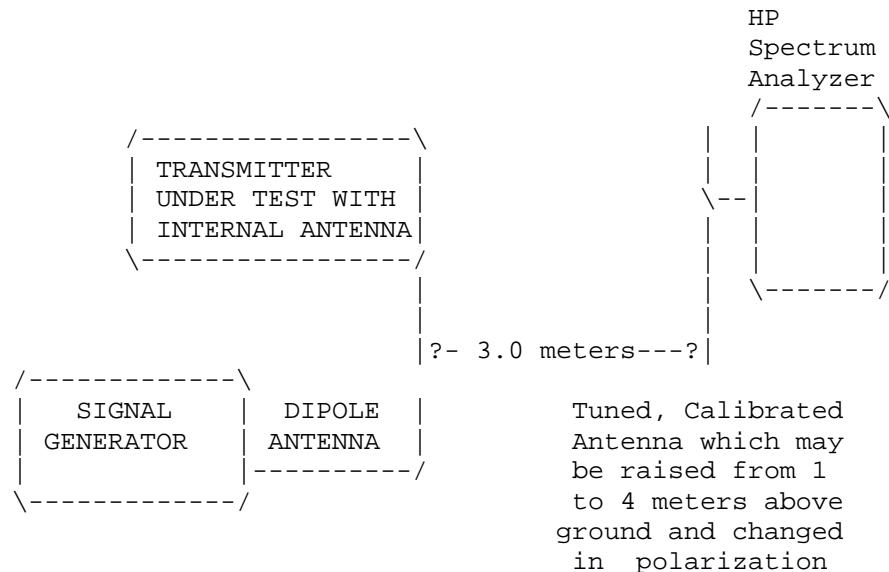
2.1033(c)(14) The data required by 2.1046-2.1057 follows;

(10) Description of all circuitry and devices provided for determining and stabilizing frequency is given in Exhibit #7. The crystal specifications are N\A.

2.1046 RF power output.

2.1046 RF power is measured by connecting a the ERP METHOD. There is no provision to limit the power. With a nominal battery voltage of 12 VDC, and the transmitter properly adjusted the RF output measures:

$$P_o = 120 \text{ milliwatts}$$



Equipment placed 1 meter above ground on a rotatable platform.

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2.1047

Modulation characteristics:

AUDIO FREQUENCY RESPONSE

The Voice is NOT allowed in this band.

2.1049

95.631(b)

95.633(b)

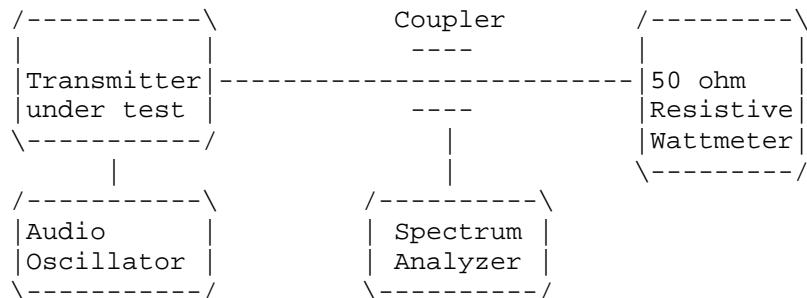
Occupied bandwidth:

At least 25dB on any frequency removed from the center of the authorized bandwidth by more than 50% up to and including 100% of the authorized bandwidth. At least 35dB on any frequency removed from the center of the authorized bandwidth by more than 100% up to and including 250% of the authorized bandwidth. At least $43 + \log_{10}(T)$ on any frequency removed from the center of the authorized bandwidth by more than 250%. At least 45dB on any frequency removed from the center of the authorized bandwidth by more than 100% up to and including 125% of the authorized bandwidth. At least 55dB on any frequency removed from the center of the authorized bandwidth by more than 125% up to and including 250% of the authorized bandwidth. At least $56 + \log_{10}(T)$ on any frequency removed from the center of the authorized bandwidth by more than 250%.

Radiotelephone transmitter with modulation limiter.

Test procedure diagram

OCCUPIED BANDWIDTH MEASUREMENT



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2.1051

NOT APPLICABLE, NO antenna port. This UUT has a permanently attached antenna.

2.1053

UNWANTED RADIATION:

95.635(1)(3)(7)(10)(11)(12)

REQUIREMENTS:

At least $56 + 10\log(T)$ on any frequency removed from the center of the authorized bandwidth by more than 250%.

$$56 + 10\log(0.120) = 46.8\text{dB or}$$

TEST DATA:

EMISSION FREQUENCY MHz	READING METERS dBuV	METER		ANTENNA CORRECTION dB	FIELD		
		COAX LOSS dB	LOSS dB		STRENGTH @3 METERS dBuV/m	ATT. dB	MARGIN ANT. ANT.
72.50	109.10	0.80	8.06	117.96	0.00	0.0	V
145.10	28.10	0.80	16.90	45.80	72.16	25.36	V
217.60	28.00	1.20	12.44	41.64	76.32	29.52	V
290.10	29.20	1.40	15.07	45.67	72.29	25.49	V
362.70	23.40	1.40	15.92	40.72	77.24	30.44	V
435.30	28.40	1.60	17.81	47.81	70.15	23.35	V
507.80	24.70	1.60	19.36	45.66	72.30	25.50	V
580.40	16.30	1.60	19.94	37.84	80.12	33.32	V
652.90	15.60	2.00	21.26	38.86	79.10	32.30	H
725.50	15.00	2.00	21.70	38.70	79.26	32.46	V

SAMPLE CALCULATION: $FS\text{dBuV/m} = MR(\text{dBuV}) + ACFdB.$

METHOD OF MEASUREMENT: The procedure used was C63.4-1992 with the unit was operating into its permanently attached antenna at a height of four feet. The spectrum was scanned from 30 to at least the tenth harmonic of the fundamental using a HP model 8566B spectrum analyzer, an Eaton model 94455-1 Biconical Antenna, ElectroMetrics antennas models TDA, TDS-25-1, TDS-25-2 & RGA 180. Measurements were made at the open area test site of TIMCO ENGINEERING INC. located at 849 N.W. State Road Newberry, FL 32669.

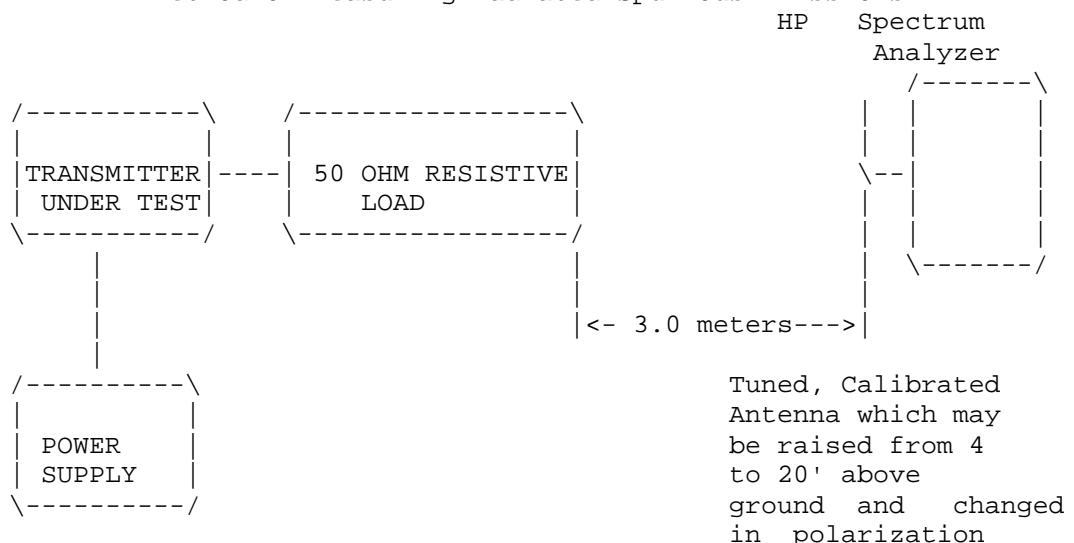
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Method of Measuring Radiated Spurious Emissions



Equipment placed 4' above ground
on a rotatable platform.

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2.1055(a)(1) Frequency stability:

95.623(b)

Temperature and voltage tests were performed to verify that the frequency remains within the .002%, 20 ppm specification limit. The test was conducted as follows: The transmitter was placed in the temperature chamber at 25 degrees C and allowed to stabilize for one hour. The transmitter was keyed ON for one minute during which four frequency readings were recorded at 15 second intervals. The worse case number was taken for temperature plotting. The assigned channel frequency was considered to be the reference frequency. The temperature was then reduced to -30 degrees C after which the transmitter was again allowed to stabilize for one hour. The transmitter was keyed ON for one minute, and again frequency readings were noted at 15 second intervals. The worst case number was recorded for temperature plotting. This procedure was repeated in 10 degree increments up to + 50 degrees C.

Readings were also taken at plus and minus 15% of the battery voltage of 12.0VDC.

MEASUREMENT DATA:

Assigned Frequency (Ref. Frequency): 72.550 000

TEMPERATURE C	FREQUENCY MHz	PPM
REFERENCE_____	72.550 000	00.00
-30_____	72.550 866	+11.94
-20_____	72.550 894	12.32
-10_____	72.550 786	10.83
0_____	72.550 524	7.22
+10_____	72.550 227	+ 3.13
+20_____	72.549 839	- 2.22
+30_____	72.549 435	-7.78
+40_____	72.549 088	-12.57
+50_____	72.548 926	-14.79
20c 85% BATT. End-Point 6.75V/dc	72.550 357	+4.96

RESULTS OF MEASUREMENTS: The maximum frequency variation over the temperature range was -14.79 to +12.32ppm. The maximum frequency variation with voltage was +4.96ppm.

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TEST EQUIPMENT LIST

1. X Spectrum Analyzer: HP 8566B-Opt 462, S/N 3138A07786, w/
preselector HP 85685A, S/N 3221A01400, Quasi-Peak Adapter
HP 85650A, S/N 3303A01690 & Preamplifier HP 8449B-OPT H02,
S/N 3008A00372 Cal. 10/17/99
2. X Biconnical Antenna: Eaton Model 94455-1, S/N 1057
3. X Log-Periodic Antenna: Electro-Metrics Model EM-6950, S/N 632
4. Double-Ridged Horn Antenna: Electro-Metrics Model RGA-180,
1-18 GHz, S/N 2319 Cal. 4/27/99
5. Horn 40-60GHz: ATM Part #19-443-6R
6. Line Impedance Stabilization Network: Electro-Metrics Model
ANS-25/2, S/N 2604 Cal. 2/9/00
7. X Temperature Chamber: Tenney Engineering Model TTRC, S/N 11717-7
8. X Frequency Counter: HP Model 5385A, S/N 3242A07460 Cal 10/6/99
9. X Peak Power Meter: HP Model 8900C, S/N 2131A00545 Cal 7/19/99
10. X Open Area Test Site #1-3meters Cal. 12/22/99
11. Signal Generator: HP 8640B, S/N 2308A21464 Cal. 9/23/99
12. Signal Generator: HP 8614A, S/N 2015A07428 Cal. 5/29/99
13. Passive Loop Antenna: EMCO Model 6512, 9KHz to 30MHz, S/N
9706-1211 Cal. 6/23/97
14. Dipole Antenna Kit: Electro-Metrics Model TDA-30/1-4, S/N 153
Cal. 11/24/99
15. AC Voltmeter: HP Model 400FL, S/N 2213A14499 Cal. 9/21/99
16. Digital Multimeter: Fluke Model 8012A, S/N 4810047 Cal 9/21/99
17. Digital Multimeter: Fluke Model 77, S/N 43850817 Cal 9/21/99
18. Oscilloscope: Tektronix Model 2230, S/N 300572 Cal 9/23/99

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