

EXHIBIT C
GENERAL INFORMATION



Retlif Testing Laboratories

Test Report Number R-7515-1
FCC ID: CCRVH3

GENERAL INFORMATION REQUIREMENTS

Paragraph 2.983(a)

Name of Applicant: **Sam Ash Music Corporation**

Address of Applicant: **262 Duffy Ave.
Hicksville, NY 11801**

Name of Manufacturer: **GPE International Ltd.**

Address of Manufacturer: **Gold Peak Building, 6/F, Kwai Wing Road
Kwai Chung, N.T., Hong Kong**

Paragraph 2.983(b)

Equipment
Identification: **FCC ID: CCRVH3**

Paragraph 2.983(c)

Quantity: **2000 per year**

Production: **1 year**

Paragraph 2.983(d)

- (1) Type of Emission: **F3E**
- (2) Frequency Range: **173.6 to 216.6 MHz**
- (3) Power Output: **3.3mW via Direct Antenna Terminal Measurements**
- (4) Maximum Power Rating: **20mW**
- (5) DC Voltages and Currents
in all elements of the
final RF Stage: **See Exhibit D**



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GENERAL INFORMATION REQUIREMENTS (continued)

Paragraph 2.983(d) (continued)

(6) Function of Solid State Devices:

<u>Designation</u>	<u>Type No.</u>	<u>IC/Diode/Transistor, Function</u>
CR301	BB729	Varactor Diode, Modulator
D401	BR1101F	Red LED, Battery Level Indicator
D402	PY1101F	Yellow LED, Battery Level Indicator
D403	PG1101F	Green LED, Battery Level Indicator
D404	FM4002	Silicon Rectifier, Reverse Power Protection
Q301	MMBTH10	NPN Transistor, Oscillator/Modulator, First Tripler
Q302	MMBTH10	NPN Transistor, RF Amplifier
Q303	MMBTH10	NPN Transistor, Second Tripler
Q304	MMBTH10	NPN Transistor, Final RF Transmit
Q401	KTC3875Y	NPN Transistor, Battery Level Indicator Driver
Q402,	KTA1504Y	PNP Transistor
U201A	NJM4558M	IC, Input Audio Pre-Amp/Limiter
U201B	NJM4558M	IC, Companded Audio Amp
U202	NE571D	IC, Audio Companding
U401A	LM393D	IC, Low Battery Detection
U401B	LM393D	IC, Low Battery Detection
U402	LM2931	+5VDC Voltage Regulator

(7) Circuit Diagrams: See Exhibit E

(8) Instruction Manual: See Exhibit F

(9) Tune Up Procedure: See Exhibit G



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GENERAL INFORMATION REQUIREMENTS (continued)

Paragraph 2.983(d) (continued)

- (10) Description of all circuitry and devices provided for determining and stabilizing frequency:

For the VHF Handheld Transmitter, circuit elements associated with the transistor stage, Q301, form the oscillator and FM modulator. The frequency of the oscillator is largely determined by the fundamental mode quartz crystal, M301. The crystal is manufactured to a ± 10 ppm (0.001%) frequency tolerance specification. The frequency stability vs. Temperature (-10°C to $+60^{\circ}\text{C}$) specification is ± 25 ppm (0.0025%). Components in series with the crystal (ie; an inductor and a varactor diode), and the base/emitter/collector capacitance network at transistor Q301 also determine the frequency of oscillation. A stable DC bias, derived from the low drop-out +5VDC voltage regulator IC, is applied through a potentiometer and series resistor and varactor diode. The regulated +5VDC design ensures stable frequency operation as the nominal 9VDC battery decays. The DC voltage is adjusted at the factory to trim the oscillator to the specified frequency of operation. Preamplifier and limited audio is applied through a series coupling capacitor and resistor to the varactor diode. As the instantaneous value of varactor diode capacitance changes due to the applied audio signal, the oscillator becomes frequency modulated. The fundamental oscillation frequency with instantaneous deviation is multiplied by a factor of nine with subsequent stages to produce the final output frequency.

- (11) Circuits For Suppression of Spurious Emissions, Limiting Modulation and Limiting Power:

For the VHF Handheld Transmitter, the fundamental oscillator signal is multiplied by a factor of 3 by the transistor stage, Q301. The collector current of Q301 forms a bandpass filter tuned at three times the fundamental frequency. The collector current of transistor Q302 also forms another bandpass filter tuned at three times the fundamental frequency. The three times multiplied signal is further multiplied by a factor of three by transistor stage, Q303 to produce a signal nine times the fundamental oscillator frequency. The collector current of transistor stage Q304 forms a bandpass filter tuned to nine times the fundamental oscillator frequency. Several capacitor values are changed in the various bandpass filter circuits to permit proper orientation at each of the available frequencies of operation in the system.

The modulation is inherently limited by the level of audio coupled to the varactor diode and capacitance versus DC tuning voltage characteristic of the varactor diode, CR301, in the crystal circuit. The maximum level of audio coupled to the varactor is controlled by two main factors: 1) The rail-to-rail signal excursion of the first section of operational amplifier IC U201, and 2) The fixed resistive divider network following the audio processing and prior to the varactor diode.



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GENERAL INFORMATION REQUIREMENTS (continued)

Paragraph 2.983(d) (continued)

- (11) Circuits For Suppression of Spurious Emissions, Limiting Modulation and Limiting Power:
(Continued)

Output power is inherently limited by the fixed emitter circuit elements of transistor stages Q301 through Q304, and the maximum 9VDC battery supply to the collector circuits of Q301 through Q304.

- (12) Digital Modulation: **Not Applicable**



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GENERAL INFORMATION REQUIREMENTS (continued)

Paragraph 2.983(e)

All tests and measurements shown in this report were made in accordance with the applicable FCC Rules and Regulations noted. All testing was performed at RETLIF TESTING LABORATORIES whose complete facility data package is on file with the FCC at the Laurel, Maryland laboratory. Prior to testing, the test sample is certified by the applicant to be tuned up in accordance with the manufacturer specifications and all gain controls are positioned for maximum gain during all testing.

See Exhibit H For Test Data and Measurement Procedures.

Paragraph 2.983(f)

Equipment Label: See Exhibit A

Paragraph 2.983(g)

Equipment Photographs: See Exhibit B

Paragraph 2.02(c)(1)

Necessary Bandwidth Determination:

The necessary bandwidth was calculated utilizing the following formula:

$$B_n = 2M + 2D \qquad M = 16.0 \text{ kHz} \\ \qquad \qquad \qquad \qquad \qquad D = 22.7 \text{ kHz}$$

$$B_n = 2(16.0) + 2(22.7) = 77.4 \text{ kHz}$$



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