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APPLICANT: MGA ENTERTAINMENT (HK) LTD.

FCC ID: LU9-242567

TEST REPORT CONTAINING:

EXHIBITS ATTACHMENTS:

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 8565OA, 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.___Temperature Chamber: Tenney Engineering Model TTRC, S/N 11717-7
8.___Frequency Counter: HP Model 5385A, S/N 3242A07460 Cal 10/6/99
9.___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

TEST PROCEDURE

GENERAL: This report shall NOT be reproduced except in full without the written approval of TIMCO ENGINEERING, INC.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-1992 using a HEWLETT PACKARD spectrum analyzer with a preselector. The bandwidth of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100KHz and the video bandwidth was 300KHz. The ambient temperature of the UUT was 85°F with a humidity of 57%.

TEST PROCEDURES CONTINUED

APPLICANT: MGA ENTERTAINMENT (HK) LTD.
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FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB. The gain of the Preselector was accounted for in the Spectrum Analyzer Meter Reading.

Example:

Freq (MHz)	METER READING + ACF = FS
33	20 dBuV + 10.36 dB = 30.36 dBuV/m @ 3m

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-1992 using a 50uH LISN. Both lines were observed. The bandwidth of the spectrum analyzer was 10kHz with an appropriate sweep speed. The ambient temperature of the UUT was 85°F with a humidity of 57%.

ANSI STANDARD C63.4-1992 10.1.7 MEASUREMENT PROCEDURES: The unit under test was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The table used for radiated measurements is capable of continuous rotation.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSIC63.4-1992 with the EUT 40 cm from the vertical ground wall.

CIRCUIT DESCRIPTION:

Q4 is an audio amplifier circuit to amplify the low level signal from the microphone. Q1 further amplifies the audio so that there is sufficient level to drive the transformer T1. The output of T1 is coupled to the final RF stage Q2 at T2. Q3 and associated circuitry is the crystal oscillator which is drive Q2 at the base. The whole transmitter is energized from a 7.5 volt battery (5 - 1.5 volt cell).

ANTENNA AND GROUND CIRCUITRY

This unit makes use of a two 30 cm lengths of wire to form a monopole antenna. The antenna is inductively coupled (L1) which is in series with transformer (T2) coupled to the RF amplifier stage. No provision is made for an external antenna. This unit is powered from a 9.0V battery.

No ground connection is provided. The unit relies on the ground track of the printed circuit board.

APPLICANT: MGA ENTERTAINMENT (HK) LTD.

FCC ID: LU9-242567

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NUMBER: 15.209

REQUIREMENTS:
1.705 to 30 MHz: 49.54 dBuV/m @ 3 METERS
30 to 88 MHz: 40.00 dBuV/M @ 3 METERS
88 to 216 MHz: 43.52 dBuV/M
216 to 960 MHz: 46.02 dBuV/M
ABOVE 960 MHz: 54.00 dBuV/M
* Harmonics must be less than the fundamental.

TEST RESULTS: A search was made of the spectrum from 25 to 1000 MHz and the measurements indicate that the unit DOES meet the FCC requirements.

TEST DATA:

EMISSION FREQUENCY MHz	METER READING AT 3 METERS dBuV	COAX LOSS dB	ANTENNA CORRECTION FACTOR dB	FIELD STRENGTH dBuV/m@3m	MARGIN dB	ANT. POL.
49.40	20.10	0.25	10.98	31.33	8.67	H

SAMPLE CALCULATION: FSdBuV/m = MR(dBuV) + ACFdB.

TEST PROCEDURE: ANSI STANDARD C63.4-1992 using a Hewlett Packard Model 8566B spectrum analyzer, a Hewlett Packard Model 85685A Preselector, a Hewlett Packard Model 85650A Quasi-Peak adapter, Electro-Metric Dipole kits, models TDA, TDS-25-1, TDS-25-2, and an Eaton Model 94455-1 Biconical Antenna. The bandwidth of spectrum analyzer was 100 kHz with an appropriate sweep speed. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported.

PERFORMED BY:_____DATE: JUNE 12, 2000

APPLICANT: MGA ENTERTAINMENT (HK) LTD.

FCC ID: LU9-242567

NAME OF TEST: Occupied Bandwidth

RULES PART NO.: 15.209

REQUIREMENTS: The field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the unmodulated carrier or to the general limits of 15.209, whichever permits the higher emission levels.

THE GRAPH IN EXHIBIT 10 REPRESENTS THE EMISSIONS TAKEN FOR THE DEVICE.

METHOD OF MEASUREMENT: A small sample of the transmitter output was fed into the spectrum analyzer and the above photo was taken. The vertical scale is set to -10 dBm per division. The horizontal scale is set to 5 kHz per division.

TEST RESULTS: The unit DOES meet the FCC requirements.

PERFORMED BY:_____ JUNE 12, 2000