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APPLICANT: GMT INDUSTRIAL LTD.

FCC ID: BSYWT-55410

TIMCO®
ENGINEERING, INC.

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April 21, 1998

Federal Communication Commission
Authorization and Evaluation Division
7435 Oakland Mills Road
Columbia, MD 21046

SUBJECT: FCC ID: BSYWT-55410
GMT INDUSTRIAL LTD.

REFERENCE: REQUEST FOR CLASS II PERMISSIVE CHANGE

TO WHOM IT MAY CONCERN:

This letter is a request for a Class II Permissive change. The applicant has made modifications to their device.

The PCB layout is different although the circuit board is the same.

Attached please find the test data and a revised schematic to reflect these changes.

Should you require any further information, please contact me at 1-888-472-2424.

Sincerely,

S. S. Sanders

SSS/sh
Encl.

APPLICANT: GMT INDUSTRIAL LTD.
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REPORT #: F:\CUS\G\GMT\GMT101TX.RPT
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TEST EQUIPMENT LIST

1. Spectrum Analyzer: Hewlett Packard 8566B, with preselector HP 85685A, & Quasi-Peak Adapter HP 8565OA, & HP 8449B OPT H02 Cal. 9/30/97
2. Eaton Biconnical Antenna Model 94455-1 20-200 MHz Serial No. 0997 Cal. 9/17/97
3. Electro-Metric Dipole Kit, 20-1000 MHz, Model TDA 25 cal. 5/15/97
4. Electro-Metric Horn 1-18 GHz, Model RGA-180, Cal. 9/24/97
5. Electro-Metric Antennas Model TDS-25-1, TDS-25-2, 9/3/97
6. Electro-Metric Line Impedance Stabilization Network Model No. EM-7821, Serial No. 101; 100KHz-30MHz 50uH. 9/30/97
7. Electro-Metric Line Impedance Stabilization Network Model No. EM-7820, Serial No. 2682; 10KHz-30MHz 50uH. 9/30/97

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 72oF with a humidity of 66%.

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 with a humidity of .

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.

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CIRCUIT DESCRIPTION:

In the receive mode the signal comes in on the receive antenna to the double tuned circuit to the super-regenerative detector Q-1, where the audio is detected. From Q-1 the audio goes to the volume resistor R13 to the input to the three(3) stage audio amplification, Q2, Q3 & Q4. Q4 drives the audio output transformer T1 which is connected to the speaker.

In the transmit mode the speaker is switched so that it is connected to the input to the audio amplifiers Q2, Q3 & Q4 and the output of Q4 drives the transformer T1, which modulates the voltage of the crystal controlled oscillator. Q1, the crystal controlled oscillator is the transmitter. Q1 is connected to the antenna via the output filter made up of L2, C1, C2, L1, & C1A.

ANTENNA AND GROUND CIRCUITRY

This unit makes use of a short, antenna. The antenna is inductively coupled. The antenna is self contained, 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 tract of the printed circuit board.

APPLICANT: GMT INDUSTRIAL LTD.

FCC ID: BSYWT-55410 - TRANSMITTER

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NO.: 15.235

REQUIREMENTS: CARRIER FREQUENCY WILL NOT EXCEED 80 dBuV/m AT 3M.
OUT-OF-BAND EMISSIONS SHALL NOT EXCEED:

30 - 88 MHz	40.0 dBuV/M	MEASURED AT 3 METERS
88 - 216 MHz	43.5 dBuV/M	
216 - 960 MHz	46.0 dBuV/M	
ABOVE 960 MHz	54.0 dBuV/M	

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.
49.86	45.50	0.25	10.99	56.74	23.26	V
99.70	18.00	0.80	8.39	27.19	16.31	H
149.60	22.10	0.80	16.90	39.80	3.70	H
199.40	24.90	0.90	12.66	37.65	5.85	H
249.30	26.60	1.20	13.35	41.15	2.35	H
299.20	25.60	1.40	15.65	42.65	3.35	H
299.50	24.90	1.40	15.65	41.95	4.05	V
349.00	24.80	1.40	15.52	41.72	4.28	V
398.90	19.30	1.40	16.97	37.67	8.33	V
448.70	22.10	1.60	18.12	41.82	4.18	V
498.60	20.60	1.60	19.27	41.47	4.53	V
548.40	18.50	1.60	19.69	39.79	6.21	V
598.30	20.50	1.60	20.09	42.19	3.81	V
648.20	11.90	1.60	21.16	34.66	11.34	V
698.00	4.10	2.00	22.26	28.36	17.64	V
747.90	3.70	2.00	21.88	27.58	18.42	V
797.70	2.70	2.00	22.01	26.71	19.29	H

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

TEST PROCEDURE: The procedure used was ANSI STANDARD C63.4-1992. The spectrum was scanned from 30 MHz to 1000 MHz. 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. The UUT was tested in 3 orthogonal planes.

TEST RESULTS: THE UNIT DOES MEET THE FCC REQUIREMENTS.

PERFORMED BY: S.S. SANDERS DATE: 21 April 1998

APPLICANT: GMT INDUSTRIAL LTD.

FCC ID: BSYWT-55410

NAME OF TEST: Occupied Bandwidth

RULES PART NO.: 15.235

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 ON THE FOLLOWING PAGE 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 attached plot 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: S. S. SANDERS 21 April 1998