

## TABLE OF CONTENTS LIST

**APPLICANT:** KIN YAT INDUSTRIAL CO., LTD.

**FCC ID:** HDT80TX138

### TEST REPORT:

|             |   |
|-------------|---|
| PAGE 1..... | GENERAL INFORMATION & TECHNICAL DESCRIPTION     |
| PAGE 2..... | TECHNICAL DESCRIPTION CONTINUED                 |
|             | RF POWER OUTPUT                                 |
| PAGE 3..... | MODULATION CHARACTERISTICS                      |
|             | OCCUPIED BANDWIDTH                              |
| PAGE 4..... | OCCUPIED BANDWIDTH PLOT                         |
| PAGE 5..... | FIELD STRENGTH OF SPURIOUS EMISSION             |
| PAGE 6..... | METHOD OF MEASURING RADIATED SPURIOUS EMISSIONS |
| PAGE 7..... | FREQUENCY STABILITY                             |
| PAGE 8..... | TEST EQUIPMENT LIST                             |

### EXHIBIT CONTAINING:

|                 |                         |
|-----------------|-------------------------|
| EXHIBIT 1.....  | BLOCK DIAGRAM           |
| EXHIBIT 2.....  | SCHEMATIC               |
| EXHIBIT 3.....  | PARTS LIST              |
| EXHIBIT 4.....  | USERS MANUAL            |
| EXHIBIT 5.....  | LABEL SAMPLE            |
| EXHIBIT 6.....  | LABEL LOCATION          |
| EXHIBIT 7.....  | EXTERNAL PHOTOGRAPHS    |
| EXHIBIT 8.....  | INTERNAL PHOTOGRAPHS    |
| EXHIBIT 9.....  | TUNING PROCEDURE        |
| EXHIBIT 10..... | OPERATIONAL DESCRIPTION |
| EXHIBIT 11..... | TEST SET UP PHOTOGRAPH  |

APPLICANT: KIN YAT INDUSTRIAL CO., LTD.

FCC ID: HDT80TX138

REPORT #: K\KIN YAT\_HDT\1366HT3\1366HT3TestReport.doc

TABLE OF CONTENTS

## GENERAL INFORMATION

- 2.1033(c) (1)(2) KIN YAT INDUSTRIAL CO., LTD. will sell the  
FCC ID: HDT80TX138 Radio Control transmitter  
in quantity, for use PART 95 SUBPART C.
- KIN YAT INDUSTRIAL CO., LTD.  
7<sup>TH</sup> FLOOR, GALAXY FACTORY BUILDING  
25-27 LUK HOP STREET, SAN PO KING  
KOWLOON  
HONG KONG
- 2.1033(c) (3) Instruction manual is included as exhibit #4.
- 2.1033 (4) Type of Emission: 8K0F1D  
95.631 (b) (1)
- Bn = 2M + 2DK  
M = 4,800 Bits per second  
D = 800 Hz (Peak Deviation)  
K = 1  
Bn = 2(4800/2) + 2(800)(1) = 4.8K + 3.2K = 8.0k
- ALLOWED AUTHORIZED BANDWIDTH = 8.00 kHz.
- 95.631 (b) Authorized Bandwidth 8 kHz for RC Transmitter
- 2.1033(c) (5) Frequency Range: 26.995 - 27.195 MHz
- 95.623 (a) (6) Power Range and Controls: There are NO user  
Power controls.
- (7) Function of each electron tube or semiconductor  
device or other active circuit device: See  
Exhibit #3.
- (8) Maximum Output Power Rating: 9.0 mW ERP.
- (9) DC Voltages and Current into Final Amplifier:
- FINAL AMPLIFIER ONLY
- Vce = 12.0 Volts DC  
Ice = 46.0 mA.
- 2.1033(c) (10) Tune-up procedure. The tune-up procedure is  
included as Exhibit #9.

2.1033(c) (10) Complete Circuit Diagrams: The circuit diagram is included as part of Exhibit # 2.

(10) Description of all circuitry and devices provided for determining and stabilizing frequency is given in EXHIBIT #10.

2.1033(c) (11) The Equipment identification is shown as Exhibit #5.

2.1033(c) (12) Photographs of the equipment are shown as Exhibits No. 7-8.

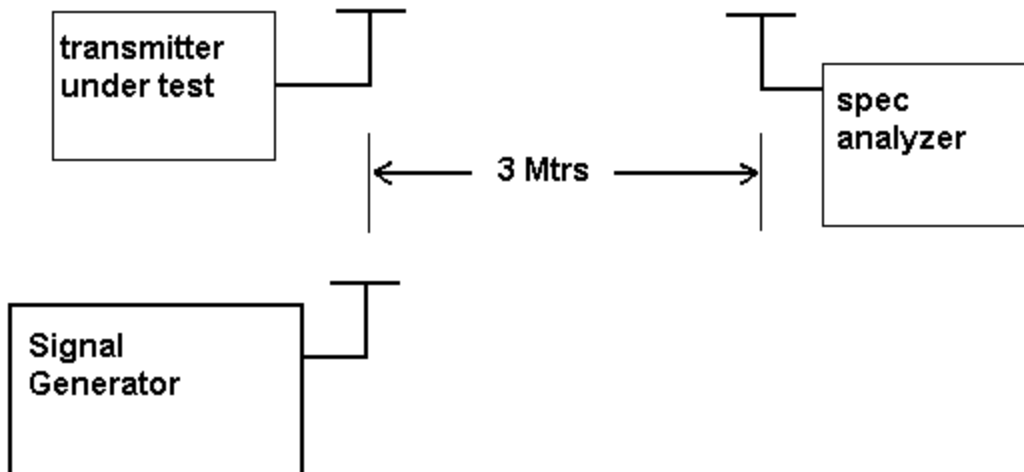
2.1033(c) (13) Equipment employing Digital modulation. N/A.

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

2.1046 RF power is measured by the ERP METHOD. There are no provisions to limit the power. With a nominal battery voltage of 12.0 VDC, and the transmitter properly adjusted the RF output measures:

$P_o = 0.0085$  Watts ERP

2.1046 RF power output.



2.1047

Modulation characteristics:

AUDIO FREQUENCY RESPONSE

Voice is NOT allowed in this band.

2.1049  
95.635 (b)

Occupied bandwidth:

- (1) 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.
- (10) At least 45 dB on any frequency removed from the center of the authorized bandwidth by more than 100% up to and including 125% of the authorized bandwidth.
- (11) At least 55 dB on any frequency removed from the center of the authorized bandwidth by more than 125% up to and including 250% of the authorized bandwidth.
- (12) At least  $56 + 10 \log_{10} (T)$  dB on any frequency removed from the center of the authorized bandwidth by more than 250%.

Radiotelephone Transmitter with Modulation Limiter  
Test Procedure Diagram

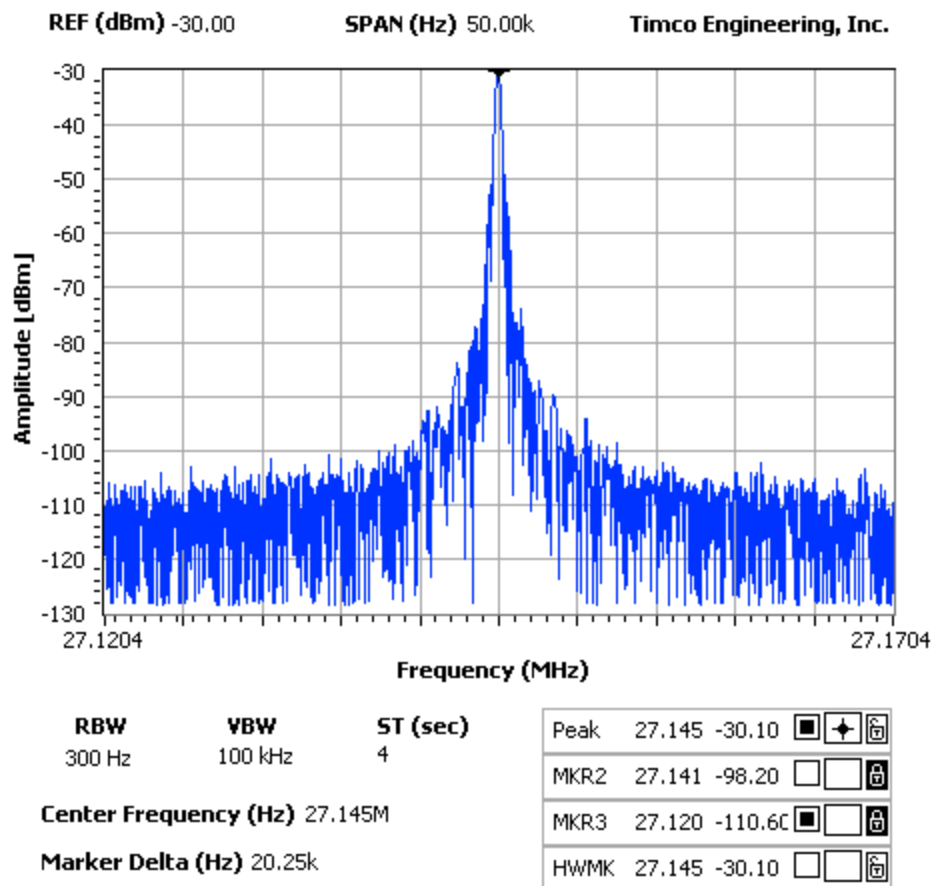
OCCUPIED BANDWIDTH MEASUREMENT



# OCCUPIED BANDWIDTH PLOT

## NOTES:

KIN YAT INDUSTRIAL CO. LTD.  
FCC ID: HDT 10091 - Occupied Bandwidth



APPLICANT: KIN YAT INDUSTRIAL CO., LTD.

FCC ID: HDT80TX138

REPORT #: K\KIN YAT\_HDT\1366HT3\1366HT3TestReport.doc

Page 4 of 8

2.1051 SPURIOUS EMISSIONS AT ANTENNA TERMINALS. 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%.

$$56 + 10\log(0.0085) = 35.29 \text{ dB}$$

**TEST DATA:**

| Emission Frequency MHz | Ant. Polarity | Corrected EUT Signal Reading | Coax Loss (dB) | Substitution Antenna (dBd) | dB Below Carrier (dBc) |
|------------------------|---------------|------------------------------|----------------|----------------------------|------------------------|
| 27.14                  | V             | 9.30                         | 0              | 0                          | 0.00                   |
| 54.26                  | V             | -45.10                       | 0              | -1.21                      | 55.61                  |
| 81.40                  | V             | -47.30                       | 0              | -1.56                      | 58.16                  |
| 108.55                 | V             | -42.50                       | 0              | -1.52                      | 53.32                  |
| 135.65                 | V             | -41.80                       | 0              | -1.44                      | 52.54                  |
| 162.85                 | V             | -48.70                       | 0              | -1.57                      | 59.57                  |
| 189.99                 | V             | -40.90                       | 0              | -1.33                      | 51.53                  |
| 217.12                 | V             | -60.20                       | 0              | -1.24                      | 70.74                  |
| 244.25                 | V             | -66.70                       | 0              | -1.26                      | 77.26                  |
| 271.43                 | V             | -62.20                       | 0              | -1.25                      | 72.75                  |

**METHOD OF MEASUREMENT:** The procedure used was C63.4-1992. The unit was operating into its permanently attached antenna at a height of 80 cm. The spectrum was scanned from 30 to at least the tenth harmonic of the fundamental using a HP model 8566B spectrum analyzer and an appropriate antenna. Measurements were made at the open field test site of TIMCO ENGINEERING INC. located at 849 N.W. State Road 45 Newberry, FL 32669.

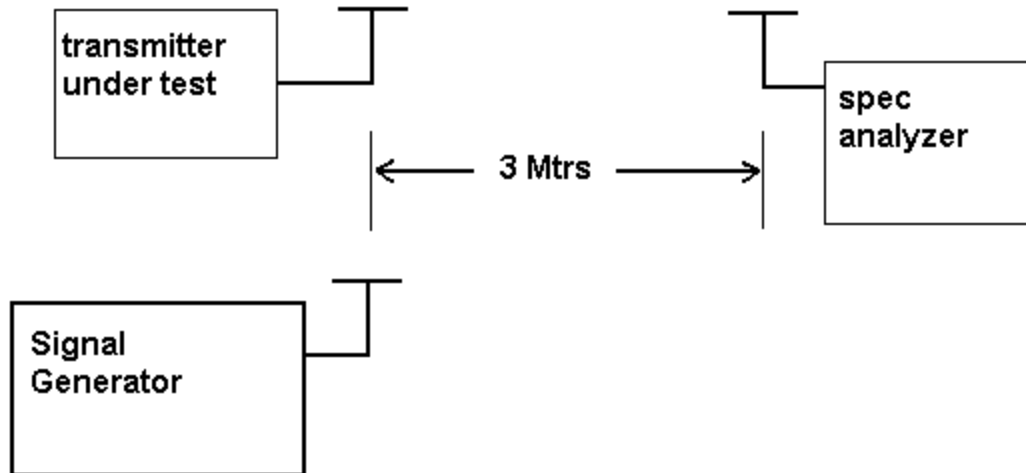
APPLICANT: KIN YAT INDUSTRIAL CO., LTD.

FCC ID: HDT80TX138

REPORT #: K\KIN YAT\_HDT\1366HT3\1366HT3TestReport.doc

Page 5 of 8

## Method of Measuring Radiated Spurious Emissions



APPLICANT: KIN YAT INDUSTRIAL CO., LTD.

FCC ID: HDT80TX138

REPORT #: K\KIN YAT\_HDT\1366HT3\1366HT3TestReport.doc

Page 6 of 8

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 the end point of the battery voltage of 12.0VDC.

#### MEASUREMENT DATA

REFERENCE FREQUENCY: 27.145275

| TEMPERATURE °C | FREQUENCY MHz | PPM   |
|----------------|---------------|-------|
| -30C           | 27.145284     | 0.33  |
| -20C           | 27.145284     | 0.33  |
| -10C           | 27.145297     | 0.81  |
| 0C             | 27.145303     | 1.03  |
| 10C            | 27.145292     | 0.63  |
| 20C            | 27.145275     | 0.00  |
| 30C            | 27.145260     | -0.55 |
| 40C            | 27.145258     | -0.63 |
| 50C            | 27.145294     | 0.70  |

|                        | DATA       | VOLTS | PPM  |
|------------------------|------------|-------|------|
| -15% BATTERY END POINT | 27.145 287 | 12    | 0.44 |

**RESULTS OF MEASUREMENTS:** The maximum frequency variation over the temperature range was -0.63 to +1.03ppm. The maximum frequency variation with voltage was 0.44 ppm.



# EMC Equipment List

| Device                                | Manufacturer        | Model         | Serial Number            | Cal/Char Date     | Due Date |
|---------------------------------------|---------------------|---------------|--------------------------|-------------------|----------|
| 3/10-Meter<br>OATS                    | TEI                 | N/A           | N/A                      | Listed<br>3/26/01 | 3/26/04  |
| 3-Meter OATS                          | TEI                 | N/A           | N/A                      | Listed<br>1/13/03 | 1/13/06  |
| Biconnical<br>Antenna                 | Eaton               | 94455-1       | 1057                     | CAL 3/18/03       | 3/18/05  |
| Biconnical<br>Antenna                 | Eaton               | 94455-1       | 1096                     | CAL 10/1/01       | 10/1/03  |
| Biconnical<br>Antenna                 | Electro-<br>Metrics | BIA-25        | 1171                     | CAL 4/26/01       | 4/26/03  |
| Blue Tower<br>Quasi-Peak<br>Adapter   | HP                  | 85650A        | 2811A01279               | CAL 4/15/03       | 4/15/05  |
| Blue Tower RF<br>Preselector          | HP                  | 85685A        | 2926A00983               | CAL 4/15/03       | 4/15/05  |
| Blue Tower<br>Spectrum<br>Analyzer    | HP                  | 8568B         | 2928A04729<br>2848A18049 | CAL 4/15/03       | 4/15/05  |
| LISN                                  | Electro-<br>Metrics | ANS-25/2      | 2604                     | CAL 10/9/01       | 10/9/03  |
| LISN                                  | Electro-<br>Metrics | EM-7820       | 2682                     | CAL 3/12/03       | 3/12/05  |
| Log-Periodic<br>Antenna               | Eaton               | 96005         | 1243                     | CAL 5/8/03        | 5/8/05   |
| Log-Periodic<br>Antenna               | Electro-<br>Metrics | EM-6950       | 632                      | CHAR 10/15/01     | 10/15/03 |
| Log-Periodic<br>Antenna               | Electro-<br>Metrics | LPA-25        | 1122                     | CAL 10/2/01       | 10/2/03  |
| Log-Periodic<br>Antenna               | Electro-<br>Metrics | LPA-30        | 409                      | CAL 3/4/03        | 3/4/05   |
| Modulation<br>Analyzer                | HP                  | 8901A         | 3435A06868               | CAL 9/5/01        | 9/5/03   |
| Modulation<br>Meter                   | Boonton             | 8220          | 10901AB                  | CAL 4/15/03       | 4/15/05  |
| Oscilloscope                          | Tektronix           | 2230          | 300572                   | CAL 7/3/03        | 7/3/05   |
| Silver Tower<br>Preamplifier          | HP                  | 8449B         | 3008A01075               | CHAR 1/28/02      | 1/28/04  |
| Silver Tower<br>Quasi-Peak<br>Adapter | HP                  | 85650A        | 3303A01844               | CAL 10/14/02      | 10/14/04 |
| Silver Tower<br>RF<br>Preselector     | HP                  | 85685A        | 2620A00294               | CAL 10/14/02      | 10/14/04 |
| Silver Tower<br>Spectrum<br>Analyzer  | HP                  | 8566B Opt 462 | 3552A22064<br>3638A08608 | CAL 10/14/02      | 10/14/04 |
| Tan Tower<br>Preamplifier             | HP                  | 8449B-H02     | 3008A00372               | CHAR 3/4/01       | 3/4/03   |
| Tan Tower<br>Quasi-Peak<br>Adapter    | HP                  | 85650A        | 3303A01690               | CAL 8/31/01       | 8/31/03  |
| Tan Tower RF<br>Preselector           | HP                  | 85685A        | 3221A01400               | CAL 8/31/01       | 8/31/03  |
| Tan Tower<br>Spectrum<br>Analyzer     | HP                  | 8566B Opt 462 | 3138A07786<br>3144A20661 | CAL 8/31/01       | 8/31/03  |

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REPORT #: K\KIN YAT\_HDT\1366HT3\1366HT3TestReport.doc