

TABLE OF CONTENTS LIST

APPLICANT: KA WAH MANUFACTORY LTD.

FCC ID: F5J75449

TEST REPORT CONTAINING:

PAGE 1.....TEST EQUIPMENT LIST AND TEST PROCEDURE  
PAGE 2.....TEST PROCEDURE CONTD.  
PAGE 3.....RADIATION INTERFERENCE TEST DATA  
PAGE 4.....OCCUPIED BANDWIDTH TEST DATA  
PAGE 5.....OCCUPIED BANDWIDTH PLOT

EXHIBITS CONTAINING:

EXHIBIT 1.....SAMPLE OF FCC ID LABEL  
EXHIBIT 2.....LOCATION OF FCC ID LABEL  
EXHIBIT 3.....BLOCK DIAGRAM  
EXHIBIT 4.....SCHEMATIC  
EXHIBIT 5A-5F.....INSTRUCTION MANUAL  
EXHIBIT 6.....EXTERNAL PHOTO - FRONT SIDE  
EXHIBIT 7.....EXTERNAL PHOTO - BACK SIDE  
EXHIBIT 8.....INTERNAL PHOTO - COMPONENT SIDE  
EXHIBIT 9.....INTERNAL PHOTO - COPPER SIDE  
EXHIBIT 10.....TEST SETUP PHOTOGRAPH  
EXHIBIT 11.....CIRCUIT DESCRIPTION

APPLICANT: KA WAH MANUFACTORY LTD.

FCC ID: F5J75449

REPORT #: K\KAWAH\428K1\428H1RPT.DOC

PAGE: TABLE OF CONTENTS LIST

APPLICANT: KA WAH MANUFACTORY LTD.  
FCC ID: F5J75449

#### 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.    Biconnical Antenna: Electro-Metrics Model BIA-25, S/N 1171
4. X Log-Periodic Antenna: Electro-Metrics Model EM-6950, S/N 632
5.    Log-Periodic Antenna: Electro-Metrics Model LPA-30, S/N 409
6.    Double-Ridged Horn Antenna: Electro-Metrics Model RGA-180,  
1-18 GHz, S/N 2319
7.    18-26.3GHz Systron Donner Standard Gain Horn #DBE-520-20
8.    Horn 40-60GHz: ATM Part #19-443-6R
9.    Line Impedance Stabilization Network: Electro-Metrics Model  
ANS-25/2, S/N 2604 Cal. 2/9/00
10.    Temperature Chamber: Tenney Engineering Model TTRC, S/N 11717-7
11.    Frequency Counter: HP Model 5385A, S/N 3242A07460 Cal 10/6/99
12.    Peak Power Meter: HP Model 8900C, S/N 2131A00545
13. X Open Area Test Site #1-3meters Cal. 12/22/99
14.    Signal Generator: HP 8640B, S/N 2308A21464 Cal. 9/23/99
15.    Signal Generator: HP 8614A, S/N 2015A07428
16.    Passive Loop Antenna: EMCO Model 6512, 9KHz to 30MHz, S/N  
9706-1211 Cal. 6/10/00
17.    Dipole Antenna Kit: Electro-Metrics Model TDA-30/1-4, S/N 153  
Cal. 11/24/99
18.    AC Voltmeter: HP Model 400FL, S/N 2213A14499 Cal. 9/21/99
19.    Digital Multimeter: Fluke Model 8012A, S/N 4810047 Cal 9/21/99
20.    Digital Multimeter: Fluke Model 77, S/N 43850817 Cal 9/21/99
21.    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 prese-  
lector. 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 73oF with a humidity of 34%.

APPLICANT: KA WAH MANUFACTORY LTD.  
FCC ID: F5J75449  
REPORT #: K\KA WAH\428K1\428H1RPT.DOC  
PAGE: 1

APPLICANT: KA WAH MANUFACTORY LTD.  
FCC ID: F5J75449

TEST PROCEDURES CONTINUED

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

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.

APPLICANT: KA WAH MANUFACTORY LTD.  
 FCC ID: F5J75449  
 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 dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
49.86	60.2	V	0.25	10.99	71.44	8.56
99.72	15.4	V	.80	8.38	24.58	18.92
149.58	9.0	V	.80	16.90	26.70	16.80
199.4	10.1	V	.90	12.66	23.66	19.84
249.3	13.1	V	1.20	13.35	27.65	18.35
299.2	20.4	V	1.40	15.65	37.45	8.55
349.0	27.5	V	1.40	15.52	44.42	1.58
398.9	19.5	V	1.40	16.97	37.87	8.13
448.7	11.6	V	1.60	18.12	31.32	14.68
498.6	15.3	H	1.60	19.27	36.17	9.83

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: MARIO R. de ARANZETA

DATE: April 30, 2001

APPLICANT: KA WAH MANUFACTORY LTD.  
 FCC ID: F5J75449  
 REPORT #: K\KAHAH\428K1\428H1RPT.DOC  
 PAGE #: 3

APPLICANT: KA WAH MANUFACTORY LTD.  
FCC ID: F5J75449  
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 EMISSION 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: MARIO R. de ARANZETA DATE: APRIL 30, 2001

APPLICANT: KA WAH MANUFACTORY LTD.  
FCC ID: F5J75449  
REPORT #: K\KAWAH\428K1\428H1RPT.DOC  
PAGE #: 4

hp

REF 61.0 dB $\mu$ V

ATTEN 10 dB +0 dB

MKR 49.85935 MHz

61.00 dB $\mu$ V

10 dB/

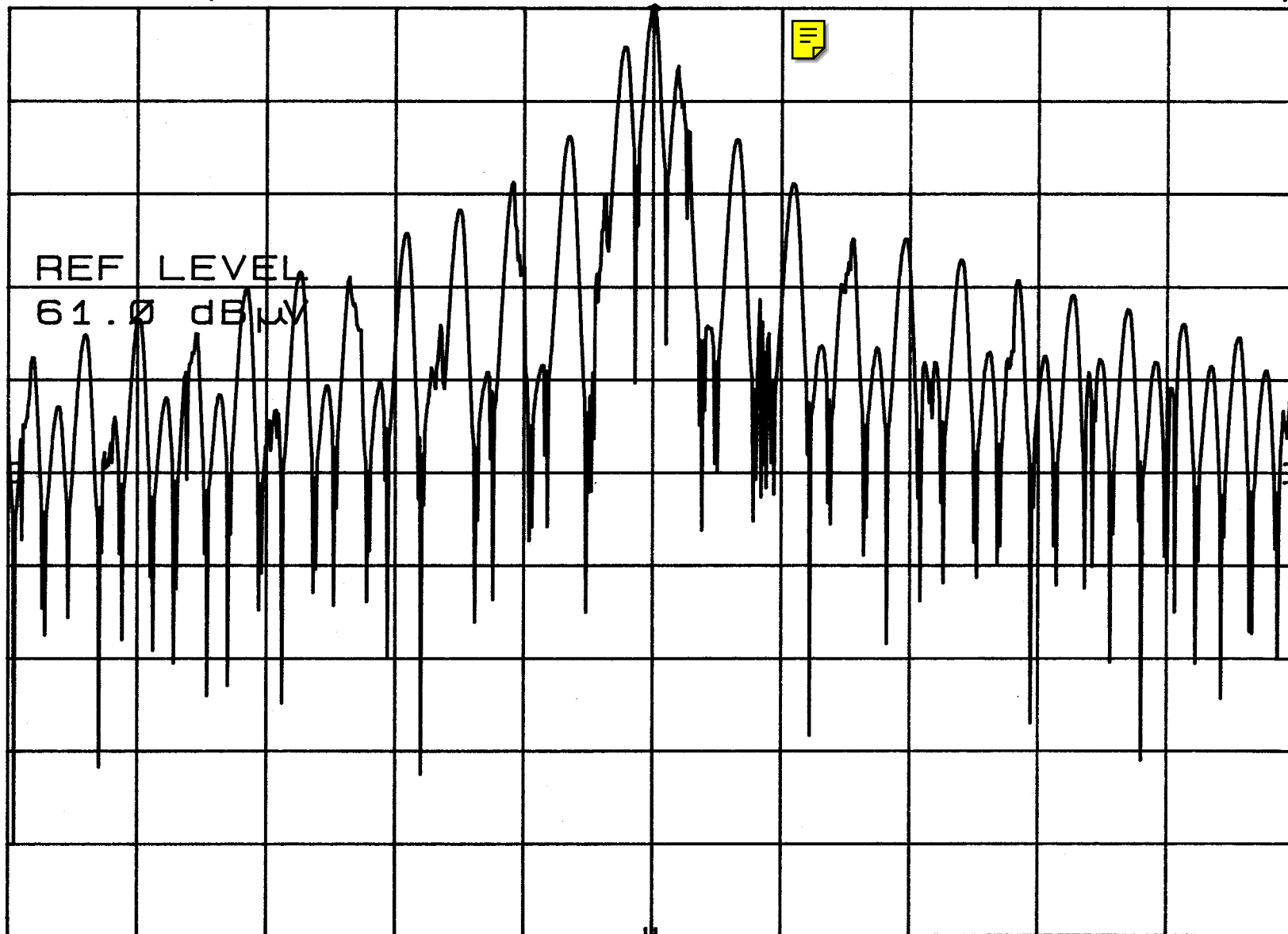
OFFSET

-20.0

dB

REF LEVEL

61.0 dB $\mu$ V



CENTER 49.85935 MHz

RES BW 300 Hz

VBW 100 kHz

SPAN 50.00 kHz

SWP 1.0 sec