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## FCC PART 97 AMATEUR RADIO TEST REPORT

Applicant	TOKYO HY-POWER LABS, INC.
Address	1-1 HATANAKA 3 CHOME, NIIZA SAITAMA 1-2 352-0012 JAPAN
FCC ID	UB9HL-25KFX
Model Number	HL-25KFX
Product Description	HIGH POWER AMPLIFIER
Date Sample Received	5/15/2007
Date Tested	6/12/07
Tested By	Richard Block
Approved By	Mario de Aranzeta
Report Number	2066AUT7TestReport.pdf
Test Results	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL  
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**



Certificate # 0955-01



Certificate # 0955-01



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## **ATTESTATION STATEMENT**

This equipment has been tested in accordance with the standards identified in the referenced test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report and demonstrate that the equipment complies with the appropriate standards. No modifications were made to the equipment during testing in order to demonstrate compliance with these standards.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made by me or under my supervision, at TIMCO ENGINEERING, INC. located at 849 N.W. State Road 45, Newberry, Florida 32669 USA.

**Authorized by:** Mario de Aranzeta

**Signature:** On file

**Function:** Engineer

**Date:** June 15, 2007

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## REPORT SUMMARY

Disclaimer	The test results only relate to the items tested.
Applicable Standard/procedure	ANSI/TIA-603C: 2004 FCC CFR 47 Part 97 FCC CRF 47 Part 15
Related Report/Approval	NA

## TEST ENVIRONMENT AND TEST SETUP

Test Facility	All tests were performed by Timco Engineering Inc. which is located at 849 NW State Road 45 Newberry, FL 32669
Lab Conditions	Temperature: 26 °C Relative Humidity: 55%
Test Supporting Equipment	N/A. The DUT is a stand alone amplifier
Deviation from test procedure	No
Modification to the DUT	No

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## DUT SPECIFICATION

DUT Description	HIGH POWER AMPLIFIER
FCC ID	UB9HL-25KFX
Model Number	HL-25KFX
Serial Number	N/A
Power Output	There are no user power controls.
DC Voltages and Current into final amplifier	Per Part 2.1033(c)(8) Input Power = (130Volts)(20Amps) = 2600 Watts
DUT Power Source	Primary - 240 VAC/50– 60Hz Secondary – N/A
Test Item	Pre-Production
Type of Equipment	Fixed

## OTHER INFORMATION IN REGARDS TO THE PROJECT

The amplifier is capable of operation in the amateur radio bands below 30 MHz. The amplifier is NOT capable of operation on any frequency or frequencies between 26 MHz and 28 MHz as marketed.

1. The amplifier is incapable of amplification above 30 MHz.
2. The gain of the amplifier is under 15 dB on all bands and under all conditions.
3. The amplifier in the off or standby state does not amplify and merely passes through the exciter energy to the antenna port. The spurious missions of the transceiver were unaffected.

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**EMC EQUIPMENT LIST**

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
Analyzer Tan Tower Spectrum Analyzer	HP	8566B Opt 462	3138A07786 3144A20661	CAL 12/7/05	12/7/07
Analyzer Tan Tower RF Preselector	HP	85685A	3221A01400	CAL 12/7/05	12/7/07
Analyzer Tan Tower Quasi-Peak Adapter	HP	85650A	3303A01690	CAL 12/8/05	12/8/07
Analyzer Tan Tower Preamplifier	HP	8449B-H02	3008A00372	CAL 12/8/05	12/8/07
Antenna: Biconnical	Electro- Metrics	BIA-25	1171	CAL 4/29/0	4/29/09
Antenna: Log-Periodic	Electro- Metrics	LPA-25	1122	CAL 8/26/06	8/26/08
Antenna: Double- Ridged Horn	Electro- Metrics	RGA-180	2319	CAL 12/29/06	12/29/08
LISN	Electro- Metrics	ANS-25/2	2604	CAL 8/27/06	8/27/08
Termaline Wattmeter	Bird Electronic Corporation	611	16405	CAL 7/16/06	7/16/08

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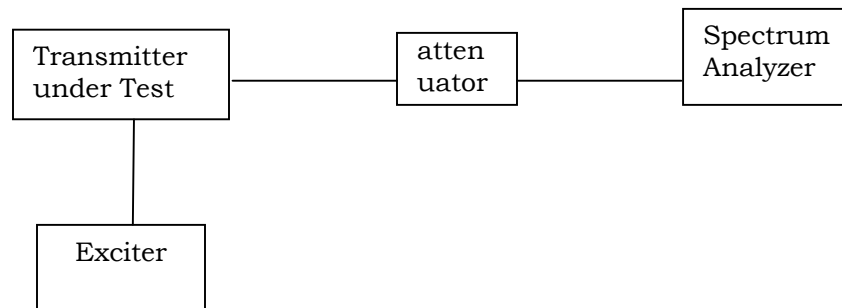
## TEST PROCEDURES:

**Power Line Conducted Emissions:** ANSI Standard C63.4-2003. The spectrum was scanned from 0.15 to 30 MHz.

**Radiation Interference:** The test procedure used was ANSI/TIA 603-C: 2004 using an Agilent spectrum analyzer with a pre-selector. In the frequency range 10 kHz to 30 MHz the RBW was 10 kHz and from 30-1000 MHz the RBW of the spectrum analyzer was 100 kHz with an appropriate sweep speed. The analyzer was calibrated in dB above a micro volt at the output of the antenna. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz.

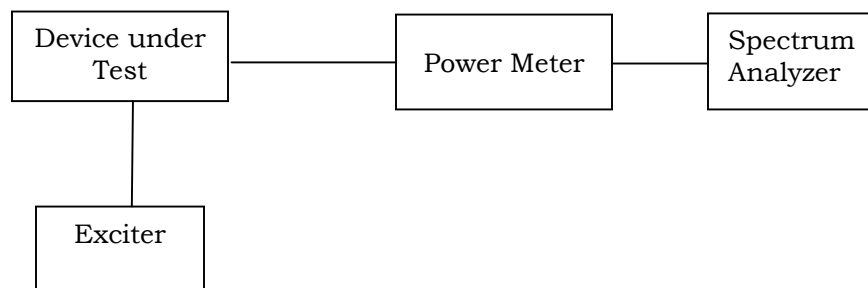
## Spurious Emission:

Test Setup Diagram



**Output Power:** RF power is measured by connecting a 50-ohm, resistive wattmeter to the RF output connector with a nominal input voltage of 240 AC Volts.

Test Setup Diagram





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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 pre-selector was accounted for in the spectrum analyzer meter reading.

Example:

Freq (MHz)	Meter Reading	+ ACF	+ CL	= FS
33	20 dBuV	+ 10.36 dB/m	+0.4 dB	= 30.76 dBuV/m @ 3m

**ANSI/TIA 603-C: 2004 Measurement Procedures:** The DUT was placed on a non-conducting table 80 cm above the ground plane with the DUT located in the center of the table. With the antenna vertical a preliminary scan was done at 1 meters distance, the DUT was moved to a 3.0-meter distance and the antenna height varied and also placed in a horizontal position. The frequency was scanned from 9.0 kHz to 1.0 GHz. When an emission was found, the table was rotated to produce the maximum signal strength.

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## RF POWER OUTPUT

**Rule Parts No.:** Part 2.1046(a), Part 97.313

**Requirements:** Power output shall not exceed 1.5K PEP Watts into a 50 ohm resistive load.

### Test Data:

Output Power:  
(Input/Output: Not to exceed 15 dB Gain)

TF (MHz)	Input (dBm)	Output (dBm)	Gain (dB)
1.900	48.7	61.0	12.3
3.750	48.3	61.6	13.3
7.150	47.9	61.2	13.3
10.125	48.3	61.6	13.3
14.150	47.8	61.5	13.7
18.110	47.6	61.3	13.7
21.200	46.1	61.0	14.9
24.900	47.5	61.2	13.7
29.100	47.3	60.9	13.6

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## STRENGTH OF SPURIOUS EMISSIONS

**Rule Parts No.:** Part 2.1053 & Part 97.307 (d) (e)

**Requirements:** The FCC Limits for spurious emissions of a transmitting operating on a frequency below 30 MHz must be at least 43dB below the mean power.

**Test Data:**

TF (MHz)	EF (MHz)	M Reading (dBm)	dB below carrier	43 dB Below Fundamental
1.900	1.900	61.0	0	N/A
1.900	3.800	-0.8	61.8	PASS
1.900	5.700	-2.3	63.3	PASS
1.900	7.600	-19.0	80.0	PASS
1.900	9.500	2.9	58.1	PASS
1.900	11.400	-22.0	83.0	PASS
1.900	13.300	-10.4	71.4	PASS
1.900	15.200	-20.4	81.4	PASS
1.900	17.100	-19.9	80.9	PASS
1.900	19.000	-21.7	82.7	PASS

TF (MHz)	EF (MHz)	M Reading (dBm)	dB below carrier	43 dB Below Fundamental
3.750	3.750	61.6	0	N/A
3.750	7.500	-8.7	70.3	PASS
3.750	11.250	10.6	51.0	PASS
3.750	15.000	-17.9	79.5	PASS
3.750	18.750	-2.2	63.8	PASS
3.750	22.500	-21.1	82.7	PASS
3.750	26.250	-16.5	78.1	PASS
3.750	30.000	-21.6	83.2	PASS
3.750	33.750	-21.0	82.6	PASS
3.750	37.500	-22.9	84.5	PASS

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TF (MHz)	EF (MHz)	M Reading (dBm)	dB below carrier	43 dB Below Fundamental
7.150	7.150	61.2	0	N/A
7.150	14.300	5.8	55.4	PASS
7.150	21.450	-8.5	69.7	PASS
7.150	28.600	-20.2	81.4	PASS
7.150	35.750	-7.5	68.7	PASS
7.150	42.900	-20.9	82.1	PASS
7.150	50.050	-9.2	70.4	PASS
7.150	57.200	-21.1	82.3	PASS
7.150	64.350	-22.1	83.3	PASS
7.150	71.500	-21.2	82.4	PASS

TF (MHz)	EF (MHz)	M Reading (dBm)	dB below carrier	43 dB Below Fundamental
10.125	10.125	61.6	0	N/A
10.125	20.250	3.4	58.2	PASS
10.125	30.375	3.8	57.8	PASS
10.125	40.500	-21.0	82.6	PASS
10.125	50.625	-1.5	63.1	PASS
10.125	60.750	-19.6	81.2	PASS
10.125	70.875	-21.0	82.6	PASS
10.125	81.000	-21.0	82.6	PASS
10.125	91.125	-22.2	83.8	PASS
10.125	101.250	-20.7	82.3	PASS

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TF (MHz)	EF (MHz)	M Reading (dBm)	dB below carrier	43 dB Below Fundamental
14.150	14.150	61.5	0	N/A
14.150	28.300	-3.1	64.6	PASS
14.150	42.450	-13.2	74.7	PASS
14.150	56.600	-21.1	82.6	PASS
14.150	70.750	-13.9	75.4	PASS
14.150	84.900	-23.6	85.1	PASS
14.150	99.050	-21.9	83.4	PASS
14.150	113.200	-21.9	83.4	PASS
14.150	127.350	-22.1	83.6	PASS
14.150	141.500	-22.1	83.6	PASS

TF (MHz)	EF (MHz)	M Reading (dBm)	dB below carrier	43 dB Below Fundamental
18.110	18.110	61.3	0	N/A
18.110	36.220	0.9	60.4	PASS
18.110	54.330	6.0	55.3	PASS
18.110	72.440	-21.7	83.0	PASS
18.110	90.550	0.7	60.6	PASS
18.110	108.660	-22.9	84.2	PASS
18.110	126.770	-17.6	78.9	PASS
18.110	144.880	-21.3	82.6	PASS
18.110	162.990	-15.9	77.2	PASS
18.110	181.100	-21.5	82.8	PASS

TF (MHz)	EF (MHz)	M Reading (dBm)	dB below carrier	43 dB Below Fundamental
21.200	21.200	61.2	0	N/A
21.200	42.400	-1.2	62.4	PASS
21.200	63.600	-14.3	75.5	PASS
21.200	84.800	-22.4	83.6	PASS
21.200	106.000	-16.5	77.7	PASS
21.200	127.200	-21.4	82.6	PASS
21.200	148.400	-9.3	70.5	PASS
21.200	169.600	-21.2	82.4	PASS
21.200	190.800	-21.1	82.3	PASS
21.200	212.000	-22.0	83.2	PASS

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TF (MHz)	EF (MHz)	M Reading (dBm)	dB below carrier	43 dB Below Fundamental
24.390	24.390	61.2	0	N/A
24.390	48.780	-2.7	63.9	PASS
24.390	73.170	-16.4	77.6	PASS
24.390	97.560	-20.7	81.9	PASS
24.390	121.950	-19.1	80.3	PASS
24.390	146.340	-20.4	81.6	PASS
24.390	170.730	-21.9	83.1	PASS
24.390	195.120	-19.9	81.1	PASS
24.390	219.510	-22.1	83.3	PASS
24.390	243.900	-22.3	83.5	PASS

This device will not transmit in the 26 – 28 MHz range.

TF (MHz)	EF (MHz)	M Reading (dBm)	dB below carrier	43 dB Below Fundamental
29.100	29.100	60.9	0	N/A
29.100	58.200	-5.2	66.1	PASS
29.100	87.300	-16.6	77.5	PASS
29.100	116.400	-22.4	83.3	PASS
29.100	145.500	-22.6	83.5	PASS
29.100	174.600	-21.5	82.4	PASS
29.100	203.700	-8.6	69.5	PASS
29.100	232.800	-20.7	81.6	PASS
29.100	261.900	-20.3	81.2	PASS
29.100	291.000	-21.8	82.7	PASS

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## POWER LINE CONDUCTED INTERFERENCE

**Rules Part No.:** Part 15.207

**Requirements:**

Frequency (MHz)	Quasi Peak Limits (dBuV)	Average Limits (dBuV)
0.15 – 0.5	66 – 56	56 – 46
0.5 – 5.0	56	46
5.0 – 30	60	50

**Test Data:** The attached graphs represent the emissions read for power line conducted for this device. Both lines were observed.

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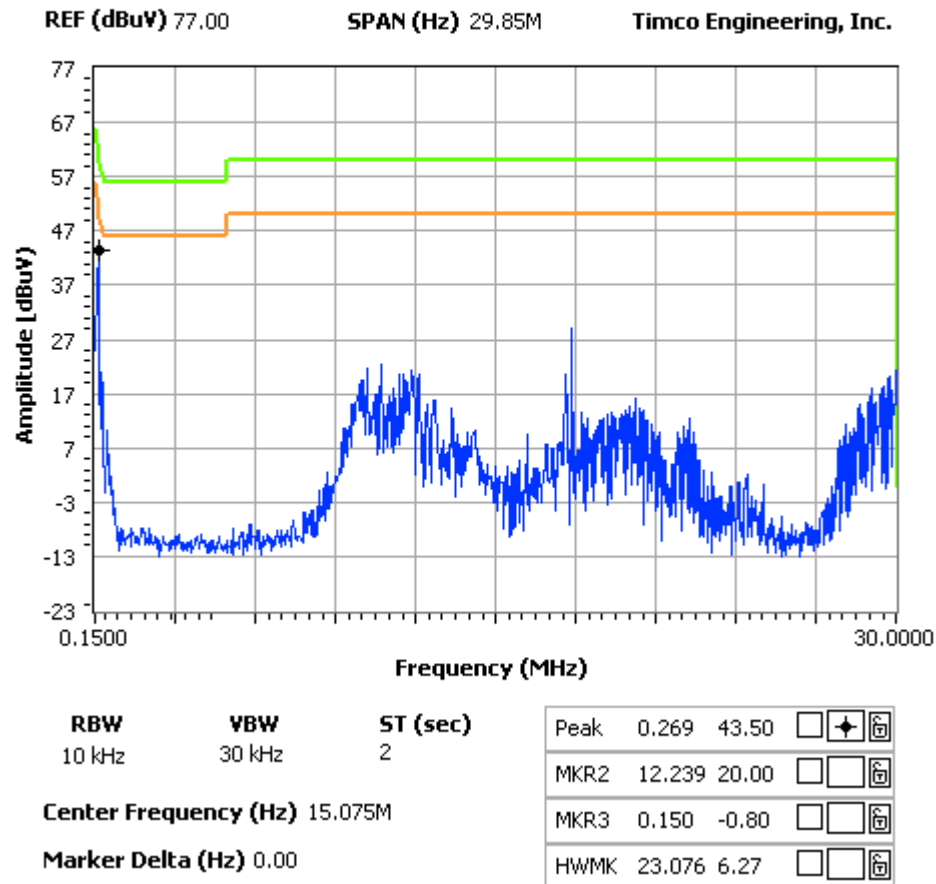


## POWERLINE CONDUCTED PLOT – LINE 1

### NOTES:

POWERLINE CONDUCTED -- LINE 1  
TOKYO HY-POWER LABS, INC. -- FCC ID: UB9 HL-25FX

### FCC 15.107 Mask Class B



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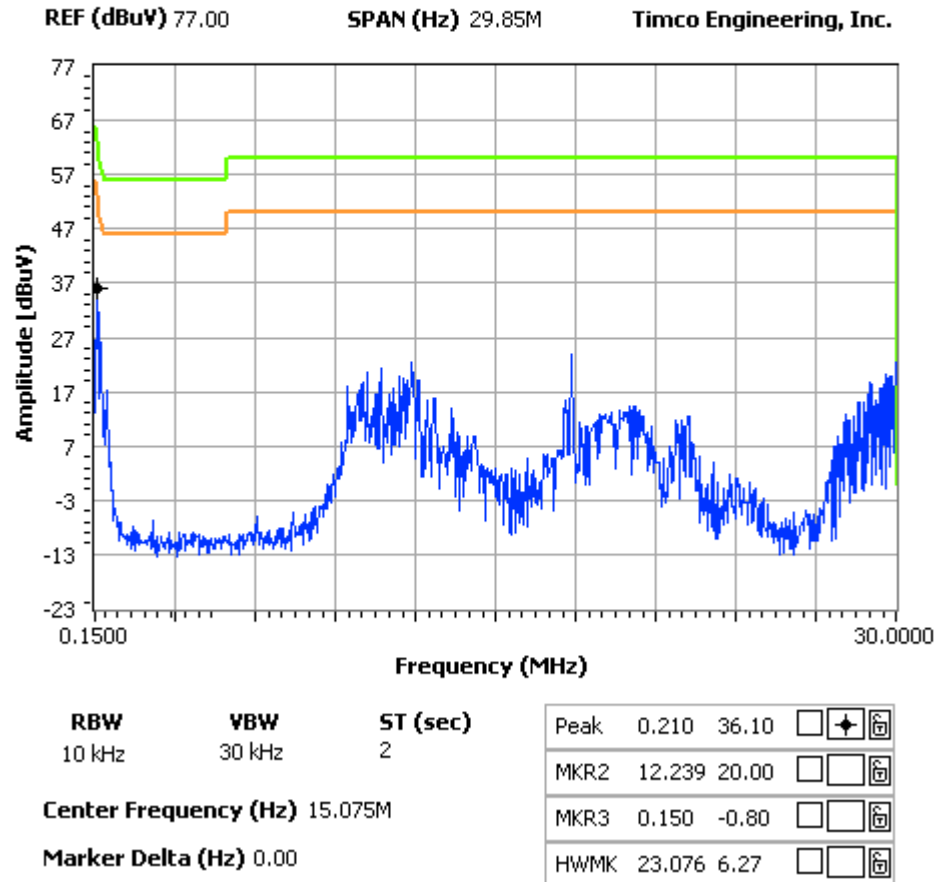


## POWERLINE CONDUCTED PLOT – LINE 2

### NOTES:

POWERLINE CONDUCTED -- LINE 2  
TOKYO HY-POWER LABS, INC. -- FCC ID: UB9 HL-25FX

### FCC 15.107 Mask Class B



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