

TABLE OF CONTENTS

APPLICANT: YICK SHUN ELECTRONIC TOYS MFY. LTD.

FCC ID: J7IYS215

TEST REPORT CONTAINING:

PAGE 1.....TEST EQUIPMENT & TEST PROCEDURE  
PAGE 2.....TEST PROCEDURE CONTINUED  
PAGE 3.....49.86MHz Tx RADIATION INTERFERENCE TEST DATA  
PAGE 4.....49.405MHz Tx RADIATION INTERFERENCE TEST DATA  
PAGE 5.....OCCUPIED BANDWIDTH TEST PROCEDURE  
PAGE 6A-6B....OCCUPIED BANDWIDTH PLOTS

EXHIBITS ATTACHMENTS:

EXHIBIT 1.....BLOCK DIAGRAM  
EXHIBIT 2.....SCHEMATIC  
EXHIBIT 3.....INSTRUCTION MANUAL  
EXHIBIT 4.....FCC ID LABEL SAMPLE  
EXHIBIT 5.....FCC ID LABEL LOCATION  
EXHIBIT 6A.....FRONT VIEW EXTERNAL PHOTOGRAPH  
EXHIBIT 6B.....REAR VIEW EXTERNAL PHOTOGRAPH  
EXHIBIT 7A.....INTERNAL COMPONENT SIDE PHOTOGRAPH  
EXHIBIT 7B.....INTERNAL COPPER SIDE PHOTOGRAPH  
EXHIBIT 8.....CIRCUIT DESCRIPTION  
EXHIBIT 9.....TEST SET UP PHOTO

APPLICANT: YICK SHUN ELECTRONIC TOYS MFY. LTD.

FCC ID: J7IYS215

REPORT #: T:\CUS\Y\YICK\88ZH1\88zh1rpt.doc

TABLE OF CONTENTS

APPLICANT: YICK SHUN ELECTRONIC TOYS MFY. LTD.  
FCC ID: J7IYS215

#### 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 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 84°C with a humidity of 55%.

APPLICANT: YICK SHUN ELECTRONIC TOYS MFY. LTD.  
FCC ID: J7IYS215  
REPORT #: T:\CUS\Y\YICK\88ZH1\88zh1rpt.doc  
PAGE #: 1

TEST PROCEDURES CONTINUED

APPLICANT: YICK SHUN ELECTRONIC TOYS MFY. LTD.  
FCC ID: J7IYS215

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.

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.

APPLICANT: YICK SHUN ELECTRONIC TOYS MFY. LTD.  
FCC ID: J7IYS215  
REPORT #: T:\CUS\Y\YICK\88ZH1\88zh1rpt.doc  
PAGE #: 2

APPLICANT: YICK SHUN ELECTRONIC TOYS MFY. LTD.

FCC ID: J7IYS215

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  
\* Harmonics must be less than the fundamental.

TEST DATA:

| EMISSION<br>FREQUENCY<br>MHz | METER READING<br>AT 3 METERS<br>dBuV | COAX<br>LOSS<br>dB | ANTENNA<br>CORRECTION<br>FACTOR dB | FIELD<br>STRENGTH<br>dBuV/m@3m | MARGIN<br>dB | ANT.<br>POL. |
|------------------------------|--------------------------------------|--------------------|------------------------------------|--------------------------------|--------------|--------------|
| 49.86                        | 52.00                                | 0.25               | 10.99                              | 63.24                          | 16.76        | V            |
| 149.60                       | 11.20                                | 0.80               | 16.90                              | 28.90                          | 14.60        | H            |
| 199.50                       | 20.30                                | 0.90               | 12.65                              | 33.85                          | 9.65         | H            |
| 249.30                       | 15.40                                | 1.20               | 13.35                              | 29.95                          | 16.05        | H            |
| 299.20                       | 21.00                                | 1.40               | 15.65                              | 38.05                          | 7.95         | H            |
| 349.00                       | 16.20                                | 1.40               | 15.52                              | 33.12                          | 12.88        | H            |
| 398.90                       | 22.30                                | 1.40               | 16.97                              | 40.67                          | 5.33         | H            |
| 448.80                       | 19.30                                | 1.60               | 18.12                              | 39.02                          | 6.98         | V            |
| 498.60                       | 11.80                                | 1.60               | 19.27                              | 32.67                          | 13.33        | V            |

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

WITH THE TRANSMITTER SECTIONS OF THIS UNIT DISABLED BY REMOVING R11, THE SPECTRUM WAS SCANNED FROM 30 TO 1000 MHz. NO SIGNIFICANT EMISSIONS WERE NOTED.

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.

TEST RESULTS: THE UNIT DOES MEET THE FCC REQUIREMENTS.

PERFORMED BY: JOSEPH SCOGLIO

DATE: MARCH 2, 2001

APPLICANT: YICK SHUN ELECTRONIC TOYS MFY. LTD.

FCC ID: J7IYS215

REPORT #: T:\CUS\Y\YICK\88ZH1\88zh1rpt.doc

PAGE #: 3

APPLICANT: YICK SHUN ELECTRONIC TOYS MFY. LTD.

FCC ID: J7IYS215

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<br>FREQUENCY<br>MHz | METER READING<br>AT 3 METERS<br>dBuV | COAX<br>LOSS<br>dB | ANTENNA<br>CORRECTION<br>FACTOR dB | FIELD<br>STRENGTH<br>dBuV/m@3m | MARGIN<br>dB | ANT.<br>POL. |
|------------------------------|--------------------------------------|--------------------|------------------------------------|--------------------------------|--------------|--------------|
| 49.40                        | 28.50                                | 0.25               | 10.98                              | 39.73                          | 0.27         | H            |
| 197.60                       | 5.90                                 | 0.90               | 12.86                              | 19.66                          | 23.84        | H            |
| 247.00                       | 7.10                                 | 1.20               | 13.29                              | 21.59                          | 24.41        | H            |
| 296.40                       | 13.40                                | 1.40               | 15.47                              | 30.27                          | 15.73        | H            |
| 345.80                       | 12.20                                | 1.40               | 15.43                              | 29.03                          | 16.97        | V            |
| 395.20                       | 17.60                                | 1.40               | 16.86                              | 35.86                          | 10.14        | H            |
| 444.60                       | 13.30                                | 1.60               | 18.03                              | 32.93                          | 13.07        | H            |

SAMPLE CALCULATION:  $FS_{dBuV/m} = MR_{dBuV} + ACF_{dB}$ .

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, and an appropriate antenna - see test equipment list. 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: JOSEPH SCOGLIO

DATE: MARCH 2, 2001

APPLICANT: YICK SHUN ELECTRONIC TOYS MFY. LTD.

FCC ID: J7IYS215

REPORT #: T:\CUS\Y\YICK\88ZH1\88zh1rpt.doc

PAGE #: 4

APPLICANT: YICK SHUN ELECTRONIC TOYS MFY. LTD.  
FCC ID: J7IYS215  
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 GRAPHS ON THE FOLLOWING PAGES REPRESENT THE EMISSIONS TAKEN FOR THE DEVICE.

METHOD OF MEASUREMENT: A small sample of the transmitter output was fed into the spectrum analyzer and the graph was printed. 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: JOSEPH SCOGLIO MARCH 2, 2001

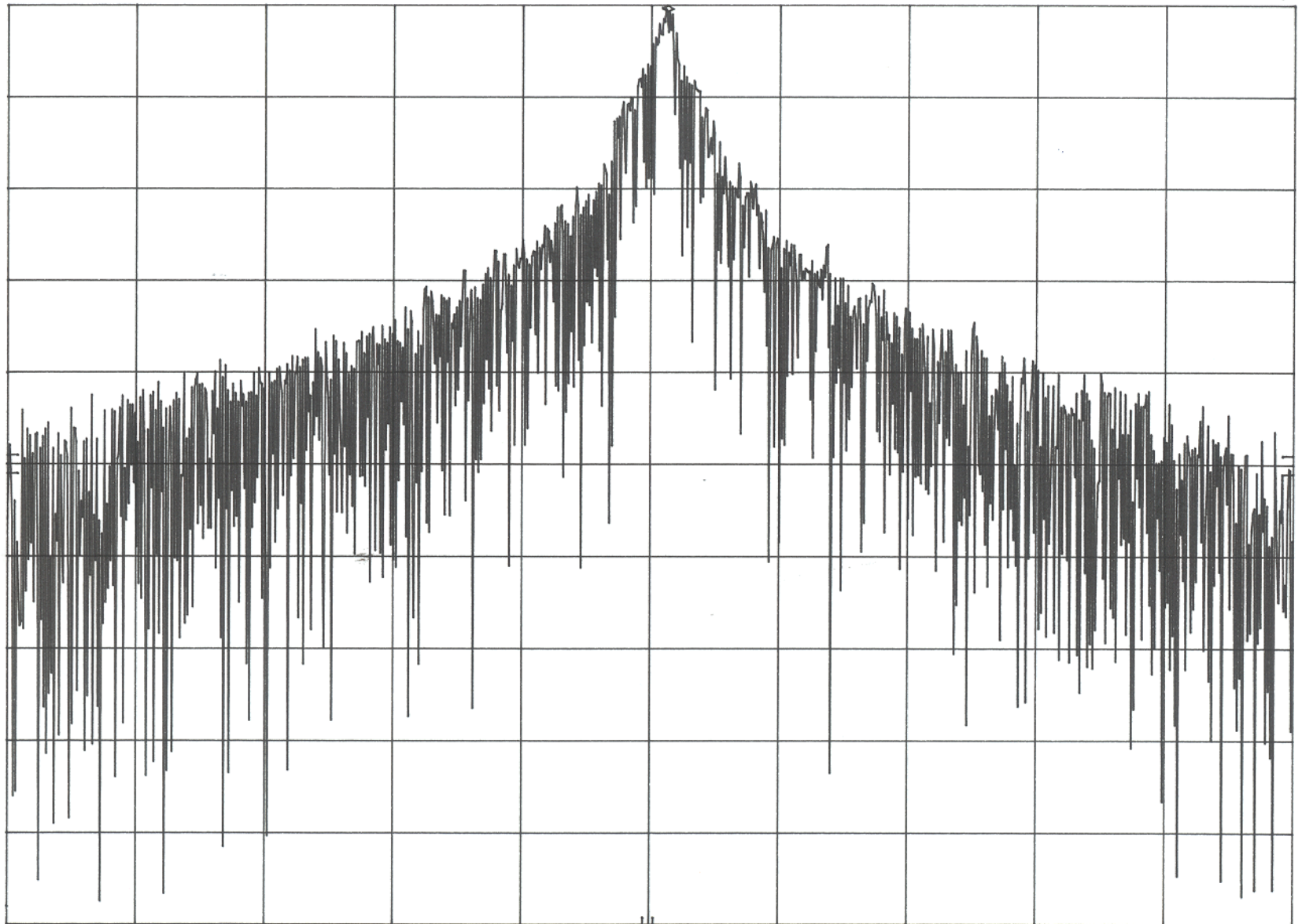
APPLICANT: YICK SHUN ELECTRONIC TOYS MFY. LTD.  
FCC ID: J7IYS215  
REPORT #: T:\CUS\Y\YICK\88ZH1\88zh1rpt.doc  
PAGE #: 5

MKR 49.86096 MHz  
50.60 dBμV

hp REF 51.0 dBμV ATTEN 10 dB +0 dB

10 dB/

OFFSET  
-20.0  
dB



START 49.82000 MHz  
RES BW 1 kHz

VBW 100 kHz

STOP 49.90000 MHz  
SWP 1.0 sec

YICK SHUN ELECTRONIC  
TOYS MEY, LTD.  
FCC ID: J7YS215  
JOB #: 88ZH1  
PAGE #: 6A

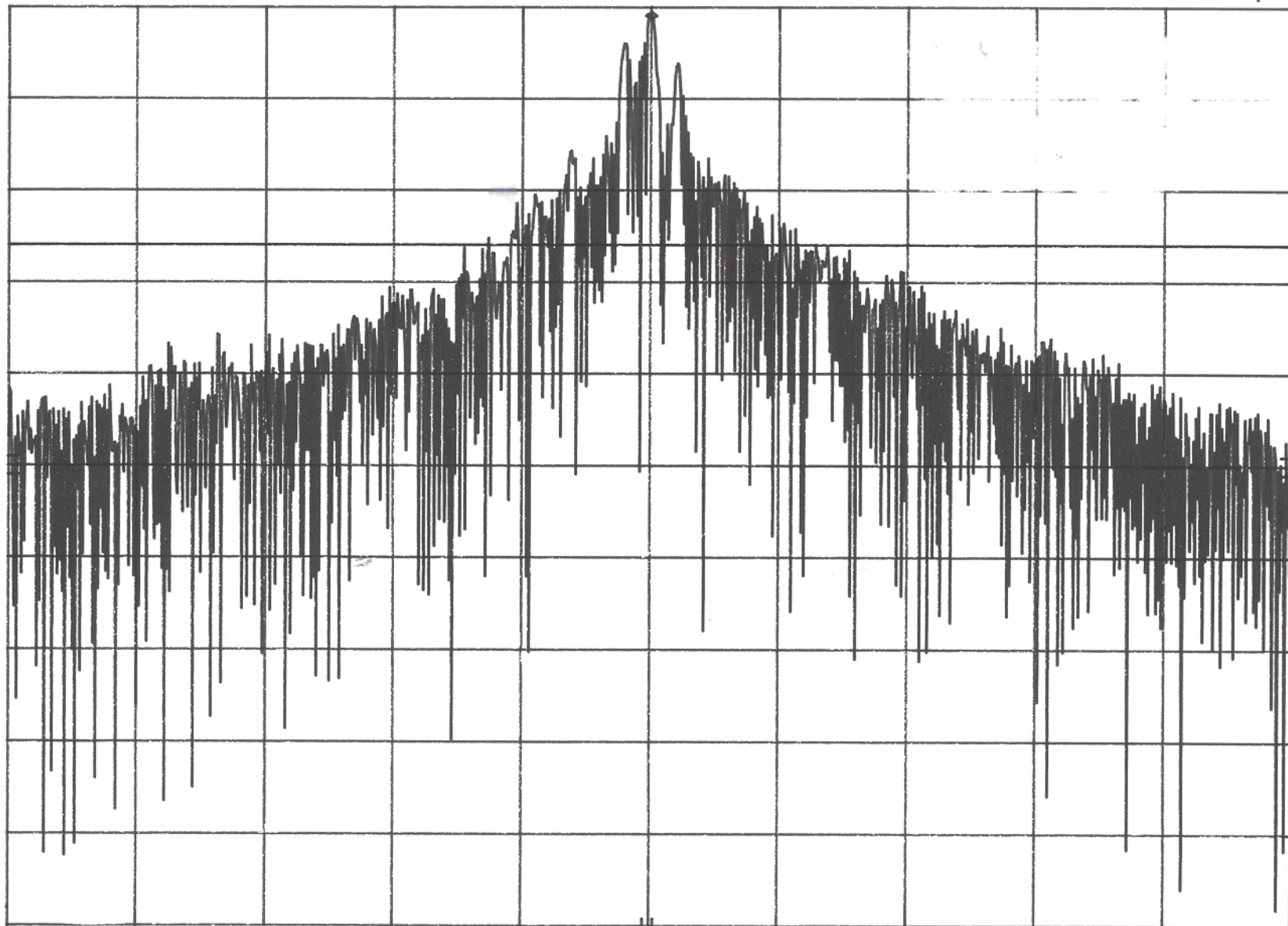
MKR 49.405 00 MHz  
35.10 dBμV

hp REF 36.0 dBμV ATTN 10 dB +0 dB

10 dB/

OFFSET  
-20.0  
dB

DL  
10.0  
dBμV



YICK SHUN ELECTRONIC  
TOYS MFY. LTD.  
FCC ID: J7IYS215  
JOB #: 88ZH1  
PAGE #: 6B

CENTER 49.405 0 MHz

RES BW 300 Hz (i) VBW 100 kHz

SPAN 50.0 kHz  
SWP 4.00 sec