

Certification Application

Under Part 95, Subpart E

EUT SUPER AVIATOR
MODEL EJ-309
FCC ID PA8EJ309312ETHC
SRT REPORT # FID0H33

PREPARED FOR

ENJOY TOY & HOBBY CORP.

7F-1, NO. 29, LANE 169, KANG NING ST.,
HIS-CHIH, TAIPEI HSIAN,
TAIWAN, R.O.C.

ENJOY TOY & HOBBY CORP.

7F-1, No. 29, Lane 169, Kang Ning St., His-Chih, Taipei
Hsian, Taiwan, R.O.C.

TEL : 886-02-26921036

FAX : 886-02-26959936

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

To whom it may concern :

FCC ID : PA8EJ309312ETHC**PREPARED FOR**ENJOY TOY & HOBBY CORP.7F-1, NO. 29, LANE 169, KANG NING ST.,HIS-CHIH, TAIPEI HSIAN,TAIWAN, R.O.C.**PREPARED BY**

SPECTRUM RESEARCH & TESTING LABORATORY INC.
NO. 101-10, LING 8, SHAN-TONG LI CHUNG – LI CITY,
TAOYUAN, TAIWAN, R. O. C.

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1. TEST REPORT CERTIFICATION

APPLICANT ENJOY TOY & HOBBY CORP.

ADDRESS 7F-1, NO. 29, LANE 169, KANG NING ST.,
HIS-CHIH, TAIPEI HSIAN,
TAIWAN, R.O.C.

EUT DESCRIPTION SUPER AVIATOR

(A) POWER SUPPLY FROM BATTERY

(B) MODEL EJ-309

(C) FCC ID PA8EJ309312ETHC

FINAL TEST DATE 10/04/2000

MEASUREMENT PROCEDURE USED

- * PART 95 SUBPART E
- * TEST PROCEDURE AND DATA ARE TRACEABLE TO NATIONAL OR INTERNATIONAL STANDARDS.

We hereby certify that

The measurements contained in this report were made in accordance with the procedures indicated, and the energy emitted by the equipment was found to be within the limits applicable.

TESTING ENGINEER

Alen Chou\

SUPERVISOR

Jesse Ho

DATE

APPROVED BY

Johnson Ho

2. TEST STATEMENT**2 . 1 TEST STATEMENT**

This letter is to explain the test condition of this project.
The EUT be tested as the following status.

a. The data was shown in this report reflects the worst case data for the condition as listed above.

b. EUT conditions:

1. Operating frequency : 72.01MHz 72.99MHz

2. Four modes were tested : Mode 1 : 72.35MHz

Mode 2 : 72.71MHz

Mode 3 : 72.87MHz

Mode 4 : 72.91MHz

3. Change operating frequency should change crystal.

c. NVLAP logo is to be approved by management (it is according to NVLAP requirement if it need) before use.

2 . 2 DEPARTURE FROM DOCUMENT POLICIES, PROCEDURE OR SPECIFICATIONS , THE STATEMENT

A . Did have any departure from document policies & procedures or from

specifications.

Yes _____, No _____ .(If yes , the description as below.)

- B. The certificate and report shall not be reproduced except in full , without the written approval of SRT laboratory.
- C. The report must not be used by the client to claim product endorsement by NVLAP or any agency the government.
- D. This product is a prototype product.
- E. The effect that the results relate only to the items tested.

3. EUT MODIFICATIONS

The following accessories were added to the EUT during testing

No modification by SRT lab.

ENJOY TOY & HOBBY CORP.

7F-1, No. 29, Lane 169, Kang Ning St., His-Chih, Taipei Hsian, Taiwan, R.O.C.

TEL : 886-02-26921036

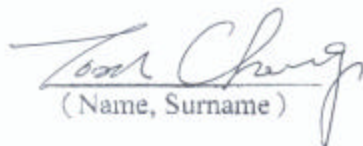
FAX : 886-02-26959936

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

To whom it may concern :

This is to serve as proper notice that our company agrees to make all modifications to FCC ID : PA8EJ309312ETHC as listed in section 3.0 of modification to submitted by Spectrum Research and Testing Laboratory, Inc.

Respectfully,


(Name, Surname)

General Manager
(Position/Title)

Effective Dates :

From 10/03/00 to 10/03/01

4. RADIATED EMISSION TEST**4.1 TEST EQUIPMENT**

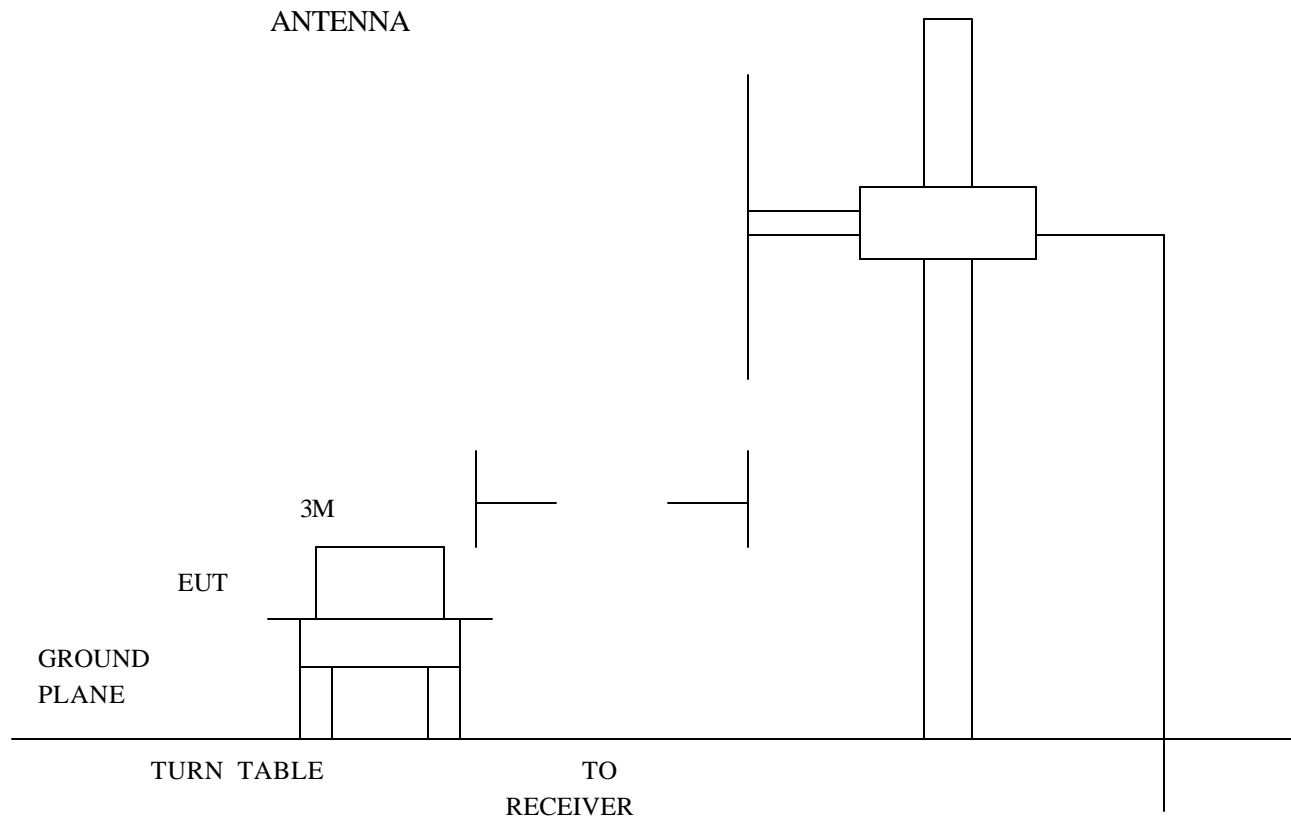
The following test equipment were used during the radiated emission test :

EQUIPMENT / FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL # / SERIAL #	DATE OF CAL. & CAL. CENTER	DUE DATE	FINAL TEST
TEST RECEIVER	9 KHz TO 2.75 MHz	R & S	ESVS30/830245/012	JULY 2000 ETC	1Y	
TEST RECEIVER	20 MHz TO 1000 MHz	R & S	ESVS30/841977/003	MARCH 2000 ETC	1Y	√
SPECTRUM ANALYZER	100 Hz TO 1500 MHz	HP	8568B/3019A05294	OCT. 1999 ETC	1Y	
SPECTRUM ANALYZER	9 KHz TO 22 GHz	HP	8593E/3322A00670	MARCH 2000 ETC	1Y	
SIGNAL GENERATOR	9 KHz TO 1080 MHz	ROHDE & SCHWARZ	SMY01/841104/019	MARCH 2000 ETC	1Y	√
DIPOLE ANTENNA	28 MHz TO 1000 MHz	EMCO	3121C/9003-534	MARCH 2000 SRT	1Y	
DIPOLE ANTENNA	28 MHz TO 1000 MHz	EMCO	3121C/9611-1239	AUG. 2000 SRT	1Y	
BI-LOG ANTENNA	26 MHz TO 2000 MHz	EMCO	3142/9701-1124	JAN. 2000 SRT	1Y	√
BI-LOG ANTENNA	26 MHz TO 2000 MHz	EMCO	3142/9608-1073	AUG. 2000 SRT	1Y	
BI-LOG ANTENNA	26 MHz TO 1100 MHz	EMCO	3143/9509-1152	AUG. 2000 SRT	1Y	
PRE-AMPLIFIER	0.1 MHz TO 1300 MHz	HP	8447D/2944A08402	MARCH 2000 ETC	1Y	
PRE-AMPLIFIER	0.1 MHz TO 1300 MHz	HP	8447D/2944A06412	JULY 2000 ETC	1Y	
HORN ANTENNA	1 GHz TO 18 GHz	EMCO	3115/9602-4681	DEC. 1999 ETC	1Y	

4 . 2 TEST PROCEDURE

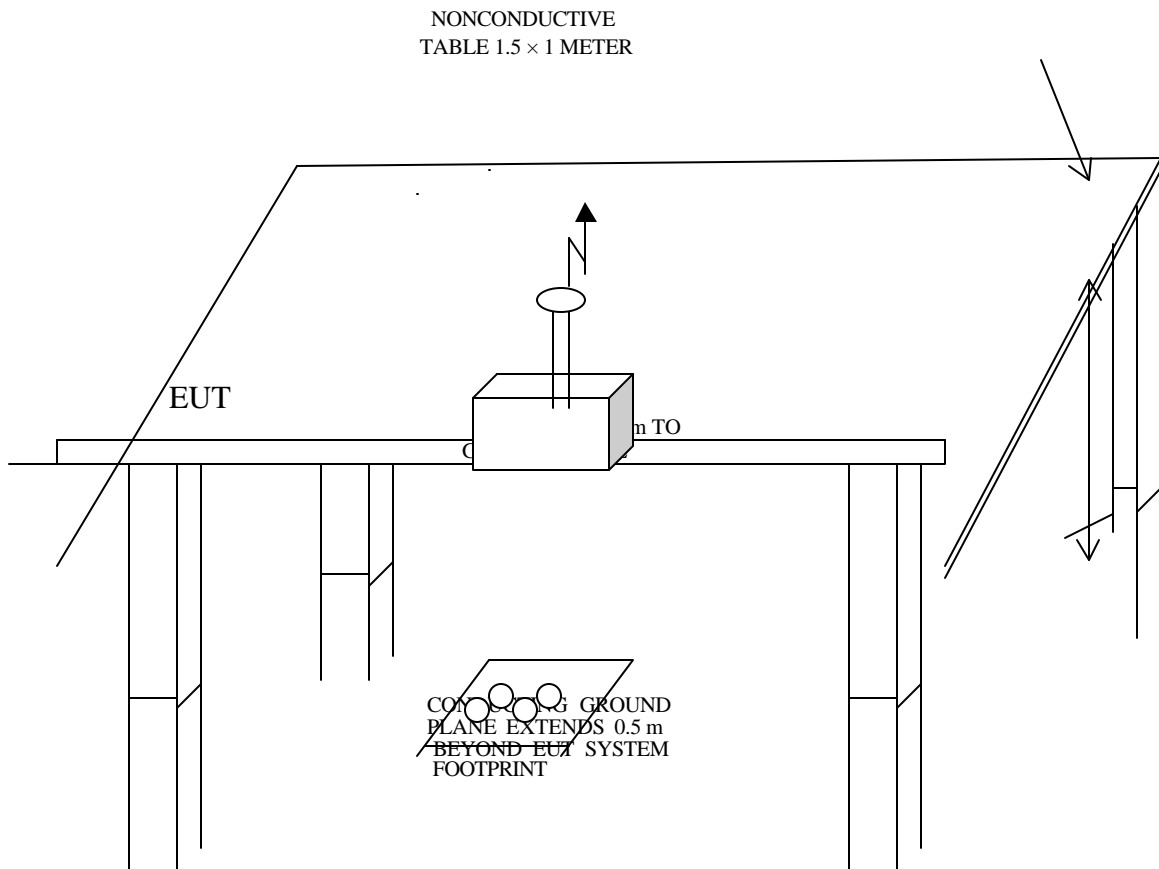
- (1).The EUT was tested according to FCC requirement. The radiated test was performed at SRT lab's open site. this site is on file with the FCC laboratory division, reference 31040 /SIT.
- (2).The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m.
- (3).The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz. All readings are above 1 GHz , peak values with a resolution bandwidth of 1 MHz . Measurements were made at 3 meters.
- (4). The antenna high were varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5). The antenna polarization Vertical polarization and horizontal polarization.

4 . 3 RADIATED TEST SET-UP



4.3 RADIATED TEST SET-UP

ELECTRICAL AND ELECTRONIC EQUIPMENT IN THE RANGE IN THE RANGE OF 9 KHz TO 40 GHz



4.4 CONFIGURATION OF THE EUT

A. EUT

DEVICE	MANUFACTURER	MODEL #	FCCID
SUPER AVIATOR	ENJOY TOY & HOBBY CORP.	EJ-309	PA8EJ309312ETHC

B. INTERNAL DEVICES

DEVICE	MANUFACTURER	MODEL #	FCCID / DoC
N/A			

4.5 EUT OPERATING CONDITION

Operating condition is according to FCC requirement.

1. Chose the crystal and fixed the operation frequency.
2. Let EUT power on, the EUT will transmit the signal.

4.6 RADIATED EMISSION LIMITS

All emission from EUT shall not exceed the level of field strength specified below

According to 95.207 (a) (2) :

The following channels may only be used to operate a model aircraft device
72.01MHz – 72.99MHz.

According to 95.639 (b) (3):

Maximum transmitter power is 0.75W in the 72 – 76MHz frequency band.

FREQUENCY (MHz)	DISTANCE (m)	FIELD STRENGTH (dBuV/m)
30 - 72	3	40.0
72 - 76	3	135.7
76 - 88	3	40.0
88 - 216	3	43.5
216 - 960	3	46.0
ABOVE 960	3	54.0

- NOTE**
1. In the emission tables above, the tighter limit applies at the band edges.
 2. Distance refers to the distance between measuring instrument, antenna, and the closest point of any part of the device or system.

4 . 7 RADIATED EMISSION TEST RESULTS

The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz . Measurements were made at 3 meters. The measurements above 1 GHz with a resolution bandwidth of 1 MHz are peak reading at a distance of 3 meters.

Temperature : 28 °C

Humidity : 60 %RH

FREQ. (MHz)	FACTOR (dB)	ANT. FACTOR (dB/m)	READING (dBuV)		EMISSION (dBuV/m)		LIMITS (dBuV/m)
			HORIZ	VERT	HORIZ	VERT	
72.3500	1.0	8.8	51.8	66.9	61.6	76.7	135.7
36.1800	0.7	16.9	13.9	19.2	31.5	36.8	40.0
108.5300	1.2	10.4	28.4	28.3	40.0	39.9	43.5
144.7300	1.4	10.2	25.8	27.3	37.4	38.9	43.5
398.1000	2.7	18.9	17.6	19.8	39.2	41.4	46.0
542.6300	3.0	20.8	18.1	16.7	41.9	40.5	46.0

REMARKS (1) . *= Measurement does not apply for this frequency.

(2). Uncertainty in radiated emission measured is <+/-4dB

(3). Any departure from specification N/A

(4). Factor will include cable loss and correction factor.

(5). Sample calculation

$20 \log (\text{emission}) \text{ uV/m} = \text{Factor(dB)} + \text{Ant. factor(dB/m)} + \text{reading(dBuV)}$

(6). According to 95.639 (b) (3):

Maximum transmitter power is 0.75W in the 72 – 76MHz frequency band.

(7). Mode 1 : 72.35MHz

SIGNED BY TESTING ENGINEER

Shm

4 . 7 RADIATED EMISSION TEST RESULTS

The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz . Measurements were made at 3 meters. The measurements above 1 GHz with a resolution bandwidth of 1 MHz are peak reading at a distance of 3 meters.

Temperature : 28 °C

Humidity : 60 %RH

FREQ. (MHz)	FACTOR (dB)	ANT. FACTOR (dB/m)	READING (dBuV)		EMISSION (dBuV/m)		LIMITS (dBuV/m)
			HORIZ	VERT	HORIZ	VERT	
72.7100	1.0	8.8	52.0	66.1	61.8	75.9	135.7
36.3600	0.7	16.8	13.4	19.1	30.9	36.6	40.0
254.5100	2.0	15.8	20.8	19.1	38.6	36.9	46.0
4001000	2.7	19.0	15.8	16.8	37.5	38.5	46.0
546.0400	3.0	20.8	13.1	12.9	36.9	36.7	46.0

REMARKS

- (1) . *= Measurement does not apply for this frequency.
- (2). Uncertainty in radiated emission measured is <+/-4dB
- (3). Any departure from specification N/A
- (4). Factor will include cable loss and correction factor.
- (5). Sample calculation

$$20 \log (\text{emission}) \text{ uV/m} = \text{Factor(dB)} + \text{Ant. factor(dB/m)} + \text{reading(dBuV)}$$
- (6). According to 95.639 (b) (3):
 Maximum transmitter power is 0.75W in the 72 – 76MHz frequency band.
- (7). Mode 2 : 72.71MHz

SIGNED BY TESTING ENGINEER

Shu

4 . 7 RADIATED EMISSION TEST RESULTS

The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz . Measurements were made at 3 meters. The measurements above 1 GHz with a resolution bandwidth of 1 MHz are peak reading at a distance of 3 meters.

Temperature : 28 °C

Humidity : 60 %RH

FREQ. (MHz)	FACTOR (dB)	ANT. FACTOR (dB/m)	READING (dBuV)		EMISSION (dBuV/m)		LIMITS (dBuV/m)
			HORIZ	VERT	HORIZ	VERT	
72.8700	1.0	8.8	49.8	65.4	59.6	75.2	135.7
36.4400	0.7	16.8	14.9	19.4	32.4	36.9	40.0
109.1300	1.2	10.3	25.9	27.8	37.4	39.3	43.5
145.7300	1.5	10.2	26.1	28.6	37.8	40.3	43.5
400.8100	2.7	19.0	20.6	15.8	42.3	37.5	46.0
546.5000	3.0	20.8	17.2	18.3	41.0	42.1	46.0

REMARKS (1) . *= Measurement does not apply for this frequency.

(2). Uncertainty in radiated emission measured is <+/-4dB

(3). Any departure from specification N/A

(4). Factor will include cable loss and correction factor.

(5). Sample calculation

$20 \log (\text{emission}) \text{ uV/m} = \text{Factor(dB)} + \text{Ant. factor(dB/m)} + \text{reading(dBuV)}$

(6). According to 95.639 (b) (3):

Maximum transmitter power is 0.75W in the 72 – 76MHz frequency band.

(7). Mode 3 : 72.87MHz

SIGNED BY TESTING ENGINEER

Shu

4 . 7 RADIATED EMISSION TEST RESULTS

The frequency spectrum from 30 MHz to 1 GHz was investigated. All readings from 30 MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz . Measurements were made at 3 meters. The measurements above 1 GHz with a resolution bandwidth of 1 MHz are peak reading at a distance of 3 meters.

Temperature : 28 °C

Humidity : 60 %RH

FREQ. (MHz)	FACTOR (dB)	ANT. FACTOR (dB/m)	READING (dBuV)		EMISSION (dBuV/m)		LIMITS (dBuV/m)
			HORIZ	VERT	HORIZ	VERT	
72.9100	1.0	8.8	53.1	62.9	62.9	72.7	135.7
36.4500	0.7	16.7	15.1	18.9	32.5	36.3	40.0
182.2500	1.7	12.4	22.1	19.8	36.2	33.9	43.5
401.0000	2.7	19.0	14.1	17.6	35.8	39.3	46.0
510.1800	2.9	20.1	16.4	14.3	39.4	37.3	46.0

REMARKS (1) . *= Measurement does not apply for this frequency.

(2). Uncertainty in radiated emission measured is <+/-4dB

(3). Any departure from specification N/A

(4). Factor will include cable loss and correction factor.

(5). Sample calculation

$20 \log (\text{emission}) \text{ uV/m} = \text{Factor(dB)} + \text{Ant. factor(dB/m)} + \text{reading(dBuV)}$

(6). According to 95.639 (b) (3):

Maximum transmitter power is 0.75W in the 72 – 76MHz frequency band.

(7). Mode 4 : 72.91MHz

SIGNED BY TESTING ENGINEER

Shu

5. BANDWIDTH

5.1 Limit

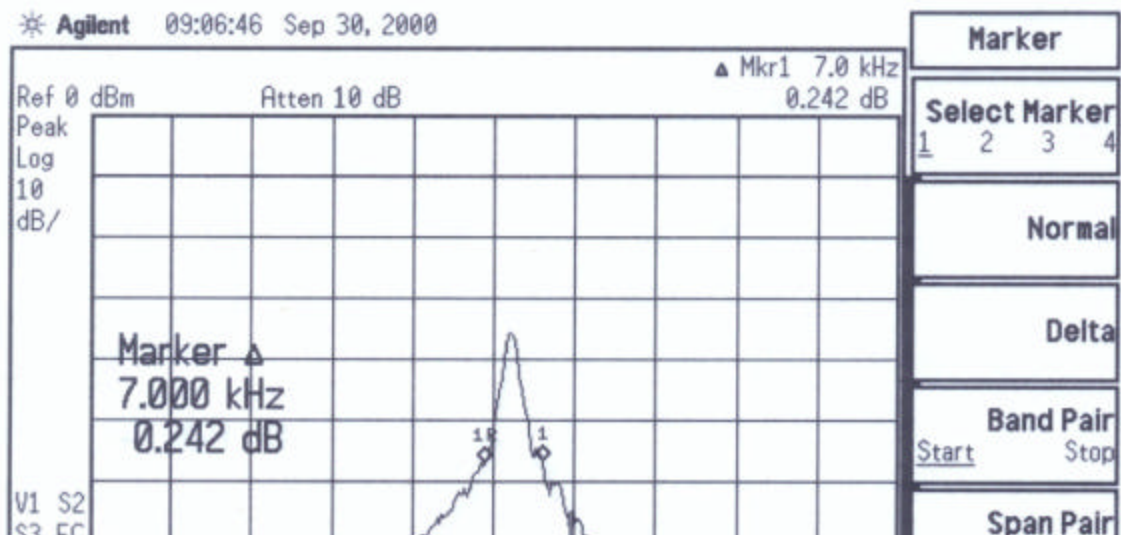
Maximum 20dB bandwidth \leq 8.0KHz

5.2 Test Results

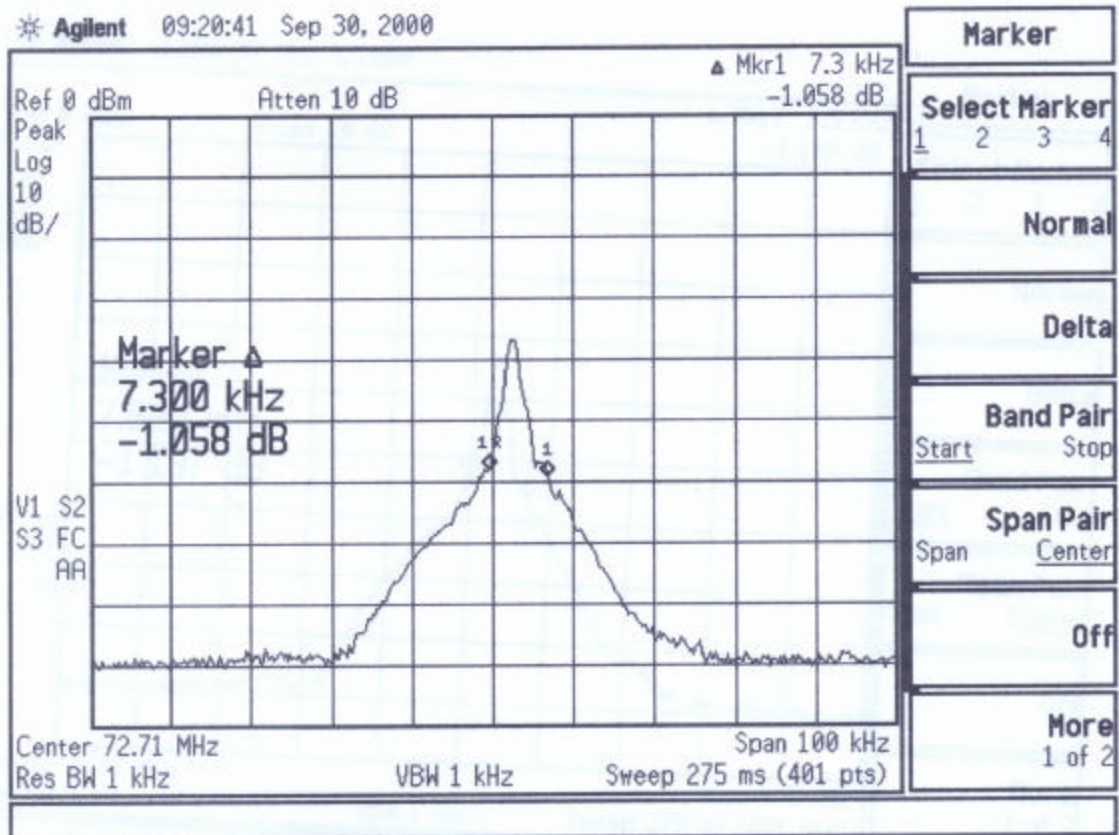
Please see attached plotter.

Mode	Operation frequency	20dB bandwidth
Mode 1	72.35MHz	7.0KHz
Mode 2	72.71MHz	7.3KHz
Mode 3	72.87MHz	7.5KHz
Mode 4	72.91MHz	6.5KHz

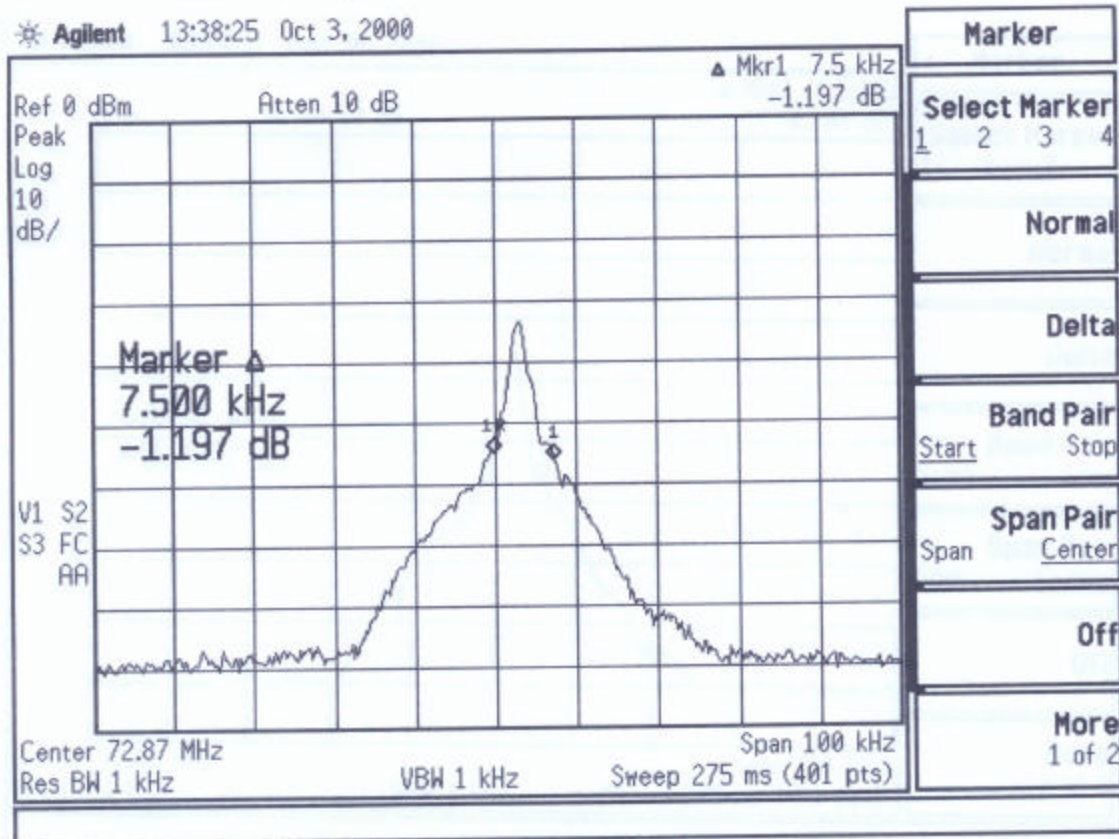
*Mode 1 : 72.35MHz



*Mode 2 : 72.71MHz



*Mode 3 : 72.87MHz



*Mode 4 : 72.91MHz

