



Horizon Hobby Distributors, Inc.
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FAX

92487

February 18, 1999

Mr. Joe Dichoso
Federal Communications Commission
Equipment Authorization Division,
Applications Processing Branch
7435 Oakland Mills Road
Columbia, MD 21046

RE: FCC ID: BRWF400EX
Reference #: 5637

FEB 22 10 31 AM '99

Dear Mr. Dichoso;

The requested information in response to your Fax dated January 20, 1999 is as follows:

1) User's manual containing instructions and warnings per section 95.649

Please refer to the actual production Instruction manual included in this parcel.

2) Page 1 of the Technical Report indicates use of the transmitter for Airplane, Helicopters, Cars, Boats, ect. The 72-73 MHz band is only for Aircraft devices. See Section 95.207(a)2. Please correct/explain this discrepancy.

Please refer to the correct page #1 included with this parcel. Please be advised that the above mentioned system will be sold for use only with R/C model Aircraft (Airplanes, Helicopters, ect).

The statement shown on the original page 1 document was written incorrectly by the testing facility (Kansai). I have reviewed our records on previous reports as far back as 1994 and have found this incorrect statement to be consistent. I will contact the Kansai labs to correct this problem for the future.

Please note that a channel sticker will be attached to the outside of the system box cover which states that this system is for use for "Aircraft Only".

3) The maximum bandwidth is 8kHz. See Section 95.633(b). To show compliance, calculate the necessary bandwidth using $2M+2D$ where M is the maximum modulating frequency and D is the maximum deviation.

Please refer to the attachment included in this parcel for this information.

4) Indicate compliance with section 95.647 by indicating the Antenna gain.

Please refer to the attachment included in this parcel for this information.

5) Section 95.645(b) states that Plug-in crystals must not be accessible to the user. Indicate whether or not the plug in crystals are accessible to the user.

Although the Transmitter crystal is visible from the back of the Transmitter, each Crystal is glued in place prior to shipment making it a permanent installation. Consumer removal of the crystal will normally result in damage to the crystal. Therefore, frequency changes are done at the Service Center Only.

Thank you for bringing these questions to my attention. If you require additional information to complete the processing of these documents, please address correspondence to me directly at:

**Horizon Hobby Distributors
ATTN: Len Sabato
Fax: 217-355-0058
Phone: 217-352-1958 Ext. 454**

Thank you for your time.

Best Regards;

A handwritten signature in black ink, appearing to be 'Len Sabato', with a stylized, sweeping flourish extending to the right.

Len Sabato

CC: RS

**Technical Report
Transmitter Model F400EX
FCC ID# BRWF400EX**

1.0 INTRODUCTION

1.1 Definition

The Model F400EX is a transmitter for the Remote Control (R/C) of model Aircraft only (Airplane, Helicopter, ect.).

This Transmitter is for FM Systems, available for the PPM (Pulse Position Modulation).

This Transmitter is a part of the Horizon Hobbies PPM "Family" of Remote Control Transmitters which at this time consists of:

Transmitter Model #	FCC ID #
Galaxy NET-72P	BRW8ZCNET72P
F400 NET-E104	BRWNET-104

Separate Applications for each transmitter and for the receiver are submitted as required by the Commission.

The Manufacturer, Japan Remote Control Company (JR), manufactures all transmitters and receivers.

The PPM family of R/C Systems is exported by JR to the United States of America, and several European and Asian countries.

The Application for this Equipment Authorization, Horizon Hobbies, INC. will, following receipt of the Grant of Equipment Authorization, import only those versions of these R/C radios which are allowed for use in the USA under the Rules and Regulations of the Federal Communications Commission; specifically these are the 72-73 MHz frequency band.

The 72-73 MHz version of this transmitter is the subject of this Application; these are the units which will be offered for sale to the general public.

KANSAI ELECTRONIC INDUSTRY DEVELOPMENT CENTER



HEAD OFFICE
6-8-7, NISHITEMMA
KITA-KU, OSAKA, 530-0047 JAPAN

Corporate Juridical Person

IKOMA
TESTING LABORATORY
10630, TAKAYAMA-CHO
IKOMA-CITY, NARA, 630-0101 JAPAN

Federal Communications Commission
Application Processing Branch
7435 Oakland Mills Road
Columbia, MD 21046

February 12, 1999
KEC No. L-359

Mr. Joe Dichoso

SUBJECT : Additional Information on FCC ID: BRWF400EX[Corresponding ID: 5637]

Reference :

Confirmation Number : 5637
FCC ID : BRWF400EX
Applicant : JAPAN REMOTE CONTROL Co., Ltd..
Device Name : Radio Control Transmitter
Model No. : F400EX
Applied Regulation : Part 95

Dir. Mr. Dichoso

I reply for your question of "Addition Information on FCC ID:BRWF400EX.

Test Items and Procedure

1. Measurement of the Necessary Band Width
2. Measurement of the Antenna Gain

Above tests were performed under : FCC Part 95 Subpart E Section 95.633(b), Section 95.647.

Test Place : KANSAI ELECTRIC INDUSTRY DEVELOPMENT CENTER.

Please put appended the report below in place of the engineering test report which was already submitted.

We are grateful if you would issue the grant at your earliest convenience

Very truly yours ;

A handwritten signature in black ink, appearing to read 'S. Izumi', is written over a horizontal line.

Seiichi Izumi
Manager
IKOMA TESTING LABORATORY
E-mail: izumi@kec.or.jp

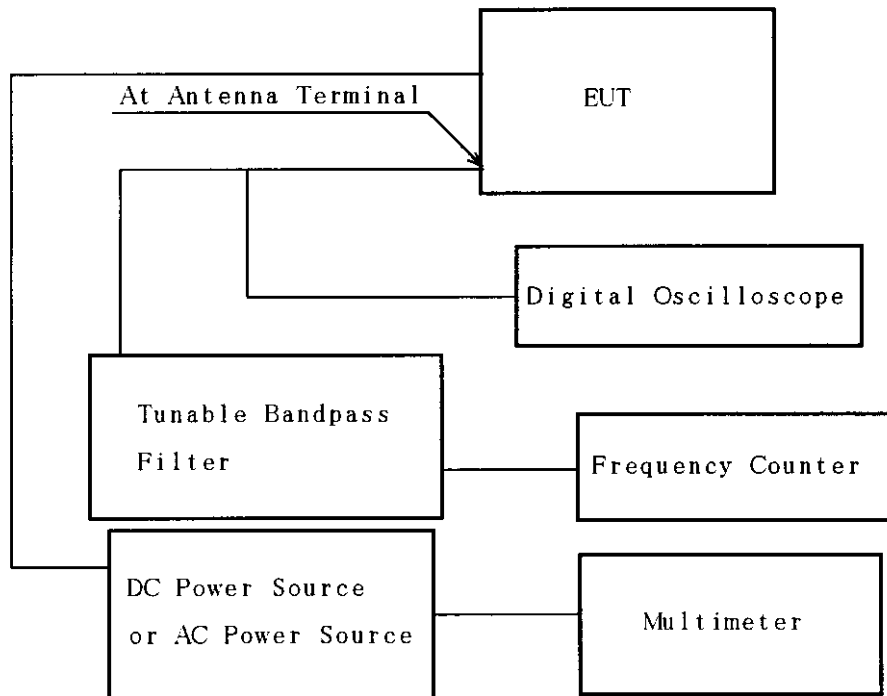
ENGINEERING TEST REPORT

1. MEASUREMENT OF THE NECESSARY BANDWIDTH

1.1 Reference Rule and Specification

FCC Rule Part 95 Subpart E [§ 95.633(b)]

1.2 Test Configuration



1.3 Test Results

1) Measurement of the Peak Frequency Deviation(D)

Flow (low frequency of carrier) : 72.58833 [MHz]
 Fhigh (high frequency of carrier) : 72.59148 [MHz]

[Environment]

Temperature : 20 °C Humidity : 59 %

[Calculation of the Peak Frequency Deviation]

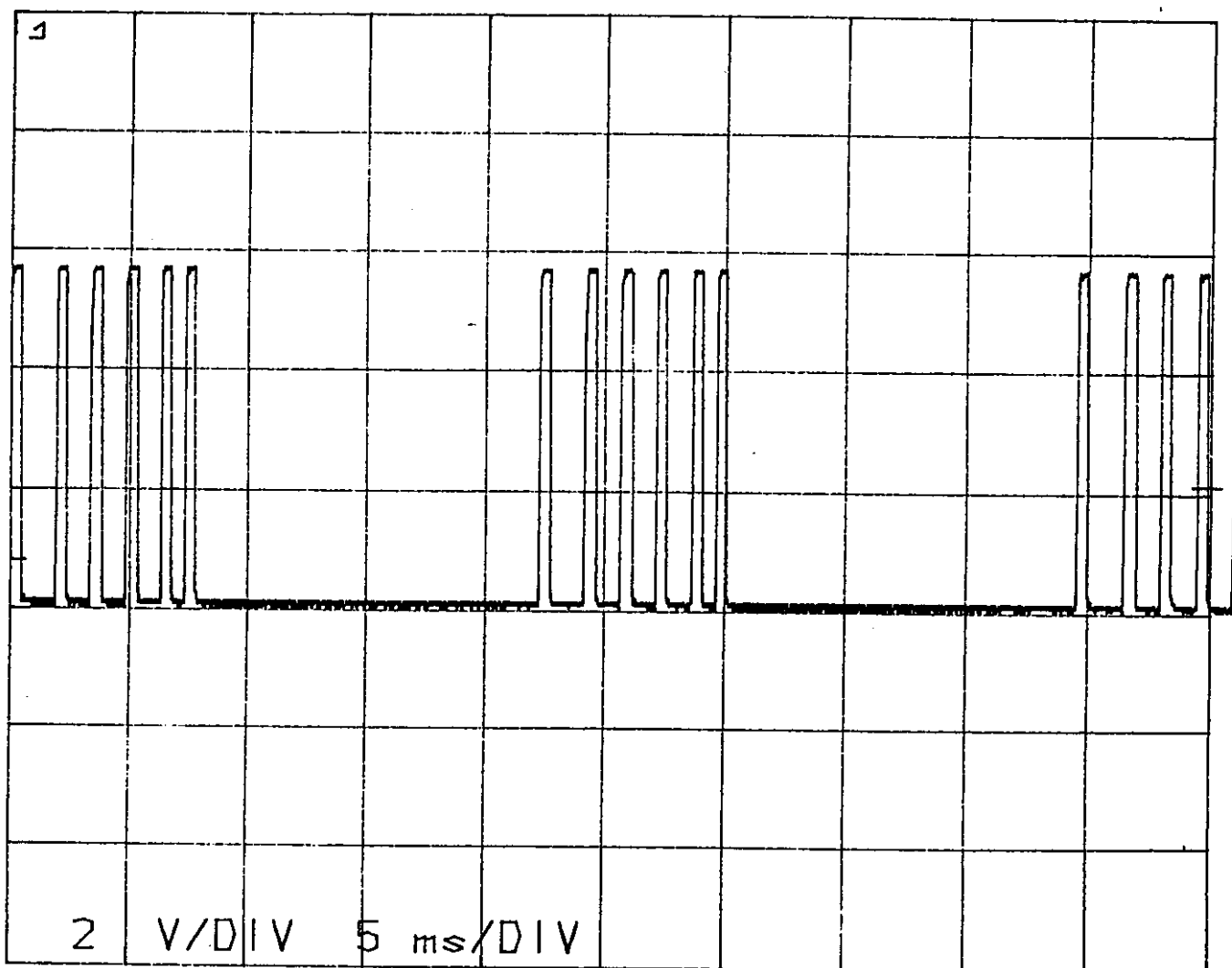
$$D = (F_{high} - F_{low}) / 2 = 1.575 \text{ [kHz]}$$

D [kHz] : the Peak Frequency Deviation

ENGINEERING TEST REPORT

2) Measurement of the Maximum Modulation Frequency(M)

Encoded Waveform



ENGINEERING TEST REPORT**[Environment]**

Temperature : 20 °C Humidity : 59 %

[Calculation of the Maximum Moduration Frequency]

From Encoded Waveform, the Modulation Pulse Width (most minimum) was readed on the plotted graph.

$$T = 3.4 \text{ [mm]} / 17.2 \text{ [mm / DIV]} \times 5 \text{ [ms / DIV]} \\ = 0.99 \text{ [ms]}$$

$$M = 1 / T \\ = 1.01 \text{ [kHz]}$$

T [ms] : the Modulation Pulse Width (most minimum)
M [kHz] : the Maximum Moduration Frequency

3) Culculation of the Necessary Bandwidth(B)

From the result 1) and 2) , the Necessary Bandwidth(B) was culculated as follows

$$B = 2M + 2D = 5.17 \text{ [kHz]}$$

B [kHz] : the Necessary Bandwidth

[Summary of Test Result]

Above test results show that the Necessary Bandwidth is less than 8.0 kHz

Tested Date: February 2, 1999

Tester Signature

Y. Kawai
Yasunari Kawai

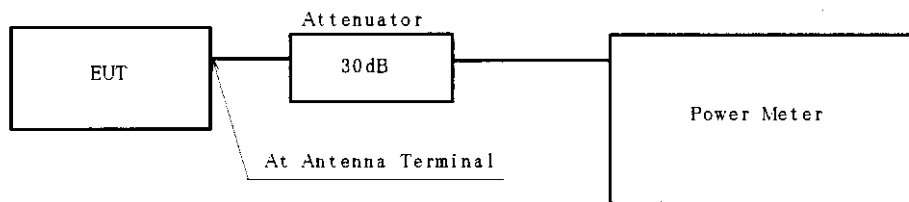
ENGINEERING TEST REPORT

1.4 LIST OF TEST INSTRUMENTS

Instrument	Manufacturer	Model No	Specifications	KEC Control No.	if used, checked by "X".	Last Cal.	Next Cal.
Regulated DC Power Supply	Kikusui	PAB18-3A	Output 0 ~ 18V, 3A	PD-32	☒	—	—
Frequency Counter	Advantest	TR5823H	Freq. Range 1 mHz-1300 MHz	CU-17	☒	1998/5	1999/5
Digital Plotter	Hewlett Packard	7090A	Plot Area A3 size	RE-17	☒	—	—
Multimeter	John Fluke	37	Volt Range 0.1mV - 1000 V Ampere Range 0.01 mA - 20 A	MM-91	☒	1998/3	1999/3
Digital Oscilloscope	Matsushita Communication Ind.	VP-5740A	Frequency Range DC -10 MHz	OS-22	☒	1998/5	1999/5

ENGINEERING TEST REPORT**2. MEASUREMENT OF THE ANTENNA GAIN****2.1 Reference Rule and Specification**

FCC Rule Part 95 Subpart E [§ 95.647]

2.2 Test Configuration

ENGINEERING TEST REPORT**2.3 Test Results**

EMISSION FREQUENCY [MHz]	METER READING [dBm]	ATTENUATO LOSS [dB]	OUTPUT POWER [dBm]	ANTENNA GAIN *1) [dB]
72.59	-9.0	30.0	21.0	-3.8

[Environment]

Temperature : 18 °C Humidity : 59 %

[Calculation of the Antenna Gain]

Meter Reading : -9.0 [dBm]
 Attenuator Loss : 30.0 [dB]
 Effective Radiated Power(ERP) *2 : 17.2 [dBm]

*1) Antenna Gain : Gain as compared to a half wave dipole.

*2) Please refer to
 the 6 of 20 page within ENGINEERING TEST REPORT (Report No. A-018-98-C) which
 KANSAI ELECTRONIC INDUSTRY DEVELOPMENT CENTER have issued.

Then, the Output Power and the Antenna Gain is calculated as follows,

$$\text{the Output Power(PA)} = -9.0 + 30.0 = 21.0 \text{ [dBm]}$$

$$\begin{aligned} \text{the Antenna Gain} &= \text{ERP} - \text{PA} \\ &= 17.2 - 21.0 = -3.8 \text{ [dB]} \end{aligned}$$

[Summary of Test Result]

Above test results show that Antenna Gain have no gain as compared to a half wave dipole.

Tested Date: February 2, 1999

Tester Signature

Y. Kawai
 Yasunari Kawai

ENGINEERING TEST REPORT

2.4 LIST OF TEST INSTRUMENTS

Instrument	Manufacturer	Model No	Specifications	KEC Control No.	if used, checked by "X".	Last Cal.	Next Cal.
Attenuator	Anritsu	MP47A	Frequency Range 0.05 - 14 GHz -30 dB	AT-40-5	☒	1999/1	2000/1
Power Meter	Anritsu	ML83A	Frequency Range 0.05 - 14 GHz	PM-15	☒	1998/3	1999/3