

ATTACHMENT A - Description of Device

	FCC File No.	Date of Grant	Product ID. Code (Model No.)	Brand Name	Remark
Original Model			M4E4B(VR5006)	ORION	
Additional Model					

# ORION ELECTRIC CO., LTD.

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## ATTACHMENT H --- MEASUREMENT OF THE UHF NOISE FIGURES ON BULLETIN OST MP-2 AND STATISTICAL PLAN.

### 1. Measurements of TV Tuner Noise Figure

This documents is the material of UHF TV Receiver Noise Figure measurement.

#### 1) Measurements Procedure.(ON BULLETIN OST MP-2 JULY 1982)

- a. The measurements of noise figures are made in a shielded room.
- b. Before testing, the television receiver and Noise figure test equipment are to be subjected to a warm-up period of sufficient time for stabilization of factors which could affect the measurements.
- c. Automatic Gain Control bias, preceding the noise output measurement point, is maintained at the level( 4.0V ) existing When there is no input signal with the receivers UHF input terminated in its nominal impedance(75 ohm).
- d. It must first be ascertained that the noise figure contribution of the I.F. amplifier following the measuring point not exceed 0.3dB.

If the influence of the 2nd stage is  $\Delta F(\text{dB})$ , then

$$\Delta F(\text{dB}) = 10 \log_{10} \left[ 1 + \frac{F_2 - 1}{G_1 F_1} \right] \quad \text{is given}$$

so that Tuner Gain :  $G_1 = 39 \text{ dB}(\text{typical})$  then the influence of the 2nd stage is to be less than 0.3dB so that influence of the 2nd stage can be ignored.

- e. N.F. Value = Meter Reading --- Balun Insertion loss

Balun Insertion loss is mentioned in ATTACHMENT H-4. Therefore, it can get noise figures of UHF Tuner by correcting Factors of this value.

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## 2) Test Equipment

### a. Standard Noise Figure Indicator

(Automatic Standard NF Indicator with Solid State Noise Source)

\* Manufactured by Elena Electronics Co., Ltd.(Japan)

\* Model ENF-2005

### b. Noise Source

\* Model No. MC1100      Made by M.S.C. and correct proofs.

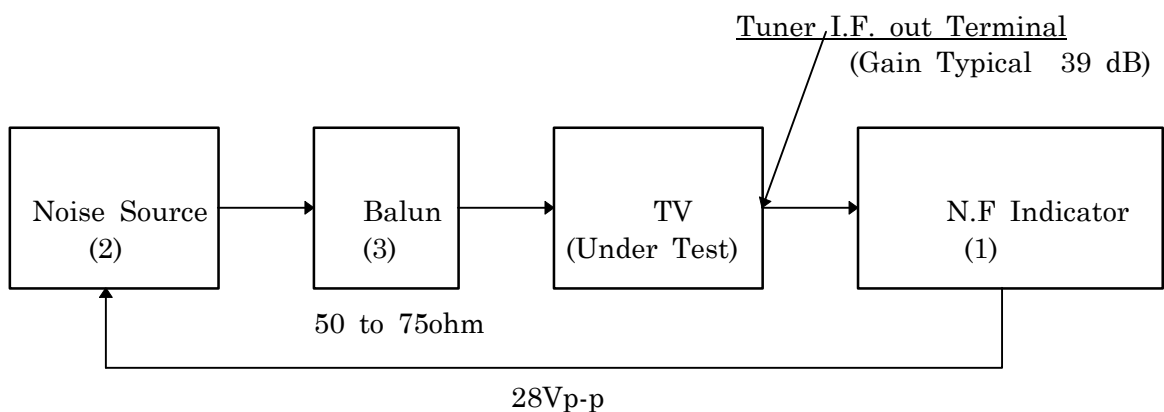
\* ENR --- This Indicator has no internal oscillator then can be use  
no correction of compensation.  
This Indicator will be send to FCC in November from Elena  
Electronics, and has already applied for it by KEC.

### c. UHF Balun

\* Model No. MP614A (50 to 75 ohm)  
Made by Anritsu Corporation

\* Insertion Loss --- Please see Attachment H-4

## 3) Block Diagram of UHF TV NF measurement.



## 2. STATISTICAL PLAN

TV Receiver UHF Noise Figure --- Certification and Compliance Criteria  
(July 1982)

In reply to yours of Jan. 14, 1980, we have pleasure of stating below:

Production Line compliance

We carry out QUALITY ASSURANCE for Plan C and submit the annual report of M4E4B(VR5006) to the FCC.

### A. Sampling Size

We check Sampling Size by TV Receiver Noise Figure --- Certification and Compliance Criteria 3.12.

### B. Data Calculation Method

When one sampling is 20 sets, measurement data are a total 200 point, that is 20 set multiplied by 10 point/set. We check whether the measurement data comply with statistical condition on  $X + KS \leq 14$ , by TV Receiver Noise Figure --- Certification and Compliance Criteria 3.13.

5) ATTACHED SHEET

1. Block Diagram of Model ENF-2005 --- H-1  
Standard Noise Figure Indicator "Elena Electronics".
2. Specifications of Standard NF Indicator --- H-2  
Model ENF-2005
3. Excess Noise Ration of Noise Source --- H-3  
M.S.C. Model MC1100, SN1012
4. Measurements Data --- H-4  
Insertion Loss of UHF Balun

Product ID.Code: M4E4B  
(Model No.: VR5006)  
Brand Name: ORION

TV RECEIVER APPLICATION CHECKLIST

- (X) 1. A statement identifying the production run plan we will be using to show compliance in meeting "TV Receiver, UHF Noise Figures Certification and Compliance Criteria" (July 1982).

: We will use the production run plan C to show compliance in meeting 14dB UHF Noise Figure requirement.

- (X) 2. A statement that NF measurements were made pursuant to OST MP-2, July 1982.

: NF measurements were made pursuant to OST BULLETIN MP-2, July 1982.

- (X) 3. The names of all manufacturing sources for the VHF and UHF tuners as well as the tuner manufacture's part No.

Product ID. Code (Model No.)	VHF/UHF 1 PACK TUNER	
	PART NO.	SOURCE
M4E4B(VR5006)	0162600018	ALPS

- (X) 4.UHF and VHF tuner part numbers assigned by the receiver manufacturer.

: There are no tuner part assigned by receiver manufacturer.

- (X) 5. Frequency bands tuned by receiver.

VHF : 2 - 13 ch  
UHF : 14- 69 ch  
CATV : 1 -125 ch(101 - 845MHz)

- (X) 6. Pursuant to Section 15.117 of the Rules, a statement specifying the receiver design noise figure, in dB.

: Because TV Tuner built in as part of a video tape recorder which uses a power splitter between the antenna terminals of the video tape recorder and input terminals of the TV Tuner, the limits of Noise Figure, pursuant to section 15.117(g)(4), complies with the limits subtracted 4dB from 14dB.

- ( ) 7. The length of the UHF lead, from antenna input terminal to the tuner.

:

- (X) 8. A numbered electrical schematic for the receiver.

: Attached

- (X) 9. The exact chassis number (MFR'S Model No. instead of chassis No.)  
(This number is classified with SUFFIX in order to show voltage difference, Radio band difference and so on.)

: Mfr's No. : M4E4B

- ( )10. Picture tube size in inches.

:

- (X)11. Type of receiver - color or black and white.

: Color

- (X)12. A description of the cabinet material.

: plastic and metal cover

- ( )13. Copy of all the information submitted with the original certification for the basic receiver.

:Attached

(X)14. A statement that the contribution not exceed 0.3dB for the channel.

$$\Delta F(\text{dB}) = 10 \log_{10} \left[ 1 + \frac{F2 - 1}{G1F1} \right]$$

where

F1 : 7.0 dB ----- typical value

F2 : 8.5 dB ----- N.F. indicator (I.F. Noise Figure)  
\* See ATTACHMENT H 2/4

G1 : 39.0 dB ----- See ATTACHMENT H 2/4

$$\Delta F = 10 \log_{10} 1.014 = 0.060 \text{ dB}$$

The contribution does not exceed 0.3dB, so, neglected.



ATTACHMENT J --- FCC IDENTIFIER (SECTION 2.926) &  
LABELING REQUIREMENTS (SECTION 15.19)

FCC IDENTIFIER (SECTION 2.926):

FCC ID: A7RM4E4B MADE IN THAILAND
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CODE DESCRIPTION ASSIGNED BY FCC:

CODE	GRANTEE
A7R	ORION ELECTRIC CO., LTD.

LABELING REQUIREMENTS (SECTION 15.19):

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.  
OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:  
(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE,  
AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE  
RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE  
UNDESIRE D OPERATION.

Please see ATTACHMENT J-1/2 and Photographs for detail of indication place.

## ATTACHMENT K

### CIRCUIT DESCRIPTION

Model No.: VR5006

Brand: ORION

The device under application is a Video Cassette Recorder, which is operated by AC commercial power source(AC120V,60Hz).

The unit contains circuitry for the Power supply, Luminance, Chrominance, System control, Servo, Operation, Head amp, Audio, Tuner and RF converter and so on.

RF Converter output is output in US 3ch or 4ch and Emission frequency is as follows.

Emission Frequency; US 3ch Video carrier: 61.25MHz

Audio carrier: 65.75MHz

US 4ch Video carrier: 67.25MHz

Audio carrier: 71.75MHz

Type of RF Input and Output Connector;

Type "F" Connector 75 ohm(Unbalanced)

The attached block diagram, ATTACHMENT L, describes the circuit functions.

FCC ID: A7RM4E4B

CIRCUIT DESCRIPTION  
ATTACHMENT K