

**MATSUSHITA-KOTOBUKI  
ELECTRONICS INDUSTRIES LTD.**

VIDEO DEVELOPMENT CENTER  
ADDRESS: 〒793 247 FUKUTAKE, SAIJO, EHIME, JAPAN  
TELEPHONE: 0897-56-1111 FAX: 0897-56-8142

REPORT OF MEASUREMENTS-(Part I)  
REQUIRED IN ( X )SUBPART B(TV INTERFACE DEVICE)  
( ) ( ) ( )

Date: Sept. 1, 1999

EXHIBIT #: 3  
FCC ID : ACJ927128AH  
Our Ref. : MKES99-F018  
Model No. : PV-V4520  
Sheet 1 of 15 Sheets

Name of Manufacturer: Matsushita-Kotobuki Electronics Industries Ltd.

Address of Manufacturer: 247 Fukutake, Saijo, Ehime, Japan

Device Under Measurement

FCC ID : ACJ927128AH  
Model No. : PV-V4520  
Trade Name : Panasonic  
Applicant : Matsushita Electric Ind. Co., Ltd.

This device is a representative model of KG-20HG chassis group.

Data Also Applied To

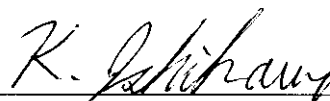
FCC ID	Model No.(Trade Name)
_____	_____
_____	_____
_____	_____

Device Description

Name of Device : ( X )Video Cassette Recorder, ( )Tuner Adapter  
Frequency : VHF 3 or 4 Ch.  
Video Line Terminals: ( X )Provided, ( )Not Provided  
Accessories : RF Out Cable (0.9 m),  
Video/Audio out Cable (1.5 m)

Certification

On the basis of the measurement data contained in Part II, all devices bearing the afore mentioned FCC ID (model No., chassis No., and trade names) are stated by the undersigned to be capable of complying with the applicable sections of Part 15 of the FCC rules governing restricted radiation devices at the time of manufacture and may be expected to continue to comply under normal conditions and with usual maintenance. The undersigned also states that the device measured was an engineering prototype, pre production, or production unit. If changes are applied to future units and such changes adversely alter spurious radiation, an amended report of measurements will be supplied to the FCC.



K. Ishikawa  
Sr. Engineer

# MATSUSHITA-KOTOBUKI ELECTRONICS INDUSTRIES LTD.

VIDEO DEVELOPMENT CENTER  
ADDRESS: 7-33-247, FUJITAKE SAUO, B-HOME, JAPAN  
TELEPHONE: 0897-56-1111 FAX: 0897-56-8142

Part 15 Subpart B, (TV Interface Device)- Part II

Sheet 2 of 15 Sheets

1) 15.107 Power Line Conducted Voltage

Freq. (MHz)	Limits (dBuV)	Interference (dBuV)	
		1- end & Grounded	The other-end & Gro.
0.45	48	26.8	26.0
0.64	48	37.5	34.8
2.39	48	31.7	31.2
3.36	48	29.1	29.5
16.39	48	29.0	29.4
28.64	48	33.0	31.9

(Refer to Sheet 3,10,12 of 15 Sheets)

2) 15.109 Radiated Emission(Including Tuner)

Freq. (MHz)	Limits (dBuV/m)	Emission (dBuV/m)	
		Horiz.	Vert.
71.27	40.0	18.7	20.0
143.18	40.0	28.9	28.4
150.34	43.5	26.9	26.8
171.82	43.5	36.3	28.0
898.00	46.0	42.2	40.8
1510.00	54.0	41.9	44.1

(Refer to Sheet 4,5,11,13,14,15 of 15 Sheets)

Note: Without Laurel Antenna  
With accessories

3) 15.111 Antenna Power Conducted Voltage

Freq. (MHz)	Limits (dBuV)	Conducted Voltage (dBuV)
413.0	51.8	42.7
419.0	51.8	41.9
1162.0	51.8	42.2
1166.0	51.8	42.5
1174.0	51.8	43.0
1178.0	51.8	42.4

( Refer to Sheet 6 of 15 Sheets)

4) 15.115(b)(1) Output Signal Level

Ch	Limits (dBuV)		Level (dBuV)	
	Visual	Aural	Visual	Aural
3	69.5	56.5	66.0	52.9
4	69.5	56.5	65.9	52.6

(Refer to Sheet 7 of 15 Sheets)

5) 15.115(b)(2) Output Terminal  
Conducted Interference

Ch	Freq. (MHz)	Limits (dBuV)	Interference (dBuV)
3	47.75	39.5	18.1
	74.75	39.5	16.0
	118.00	39.5	17.8
	122.50	39.5	22.0
	127.00	39.5	20.1
	183.75	39.5	16.6
4	53.75	39.5	17.2
	80.75	39.5	14.9
	130.00	39.5	23.3
	134.50	39.5	31.9
	139.00	39.5	27.3
	201.75	39.5	13.8

(Refer to Sheet 8 of 15 Sheets)

6) 15.115© Transfer SW Isolation

Ch	Limits (dBuV)	Level (dBuV)
3	9.5	4.2
4	9.5	6.0

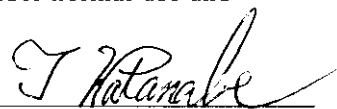
(Refer to Sheet 9 of 15 Sheets)

MEASUERMENT SITE : MKS Site  
MEASUERMENT PROCEDURE : ANSI C63.4-1992

Note:(1) Detailed report: Refer to attached sheets.

I HEREBY STATE THAT: The measurements shown in Part II of this form were made in accordance with the procedures indicated and the energy emitted by this equipment was found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements and vouch for the qualifications of all persons taking them.

I FURTHER STATE THAT: On the basis of the measurements made, the device tested is capable of operation in compliance with the requirements of Part 15 of the FCC Rules under normal use and maintenance.

  
T. Watanabe  
Engineer

## 1) 15.107 Power Line Conducted Voltage

Video Signal	Freq. (MHz)	Meter Read. (dBuV)		LISN Factor (dB)	Matching Pad Loss (dB)	Interference (dBuV)	
		1-end & Gro.	The other-End&Gro.			1-end & Gro.	The other-End &Gro.
Multi Burst 1 V p-p	0.45	20.4	19.9	0.1	6.2	26.7	26.2
	0.64	31.0	28.4	0.1	6.2	37.3	34.7
	2.39	25.4	25.0	0.2	6.2	31.8	31.4
	3.36	21.9	22.8	0.3	6.2	28.4	29.3
	16.39	20.4	21.1	0.7	6.2	27.3	28.0
	28.64	23.4	22.6	1.0	6.2	30.6	29.8
Multi Burst 5 V p-p	0.45	26.8	26.0	0.1	6.2	26.8	26.0
	0.64	37.5	34.8	0.1	6.2	37.5	34.8
	2.39	31.7	31.2	0.2	6.2	31.7	31.2
	3.36	29.1	29.5	0.3	6.2	29.1	29.5
	16.39	29.0	29.4	0.7	6.2	29.0	29.4
	28.64	33.0	31.9	1.0	6.2	33.0	31.9
Internal Signal	0.45	20.5	19.7	0.1	6.2	26.7	25.8
	0.64	31.2	28.5	0.1	6.2	37.2	35.0
	2.39	25.3	24.8	0.2	6.2	31.6	31.5
	3.36	22.6	23.0	0.3	6.2	28.0	28.7
	16.39	22.1	22.5	0.7	6.2	28.2	29.1
	28.64	25.8	24.7	1.0	6.2	29.6	28.6
RF/CATV Signal Input	0.45	20.5	19.9	0.1	6.2	26.8	26.2
	0.64	30.8	28.0	0.1	6.2	37.1	34.3
	2.39	25.4	24.7	0.2	6.2	31.8	31.1
	3.36	20.9	21.5	0.3	6.2	27.4	28.0
	16.39	21.7	22.0	0.7	6.2	28.6	28.9
	28.64	22.2	21.7	1.0	6.2	29.4	28.9

## Note:

## 1. Sample calculation at

M.B., 1 V p-p, 1-end & Gro. 0.45 MHz ;  $20.4 + 0.1 + 6.2 = 26.7$  (dBuV)

## 2. Measuring Instruments:

- a) Field strength meter - Kyoritsu Electric Work Co., Ltd.  
Model : KNM-402C  
(1) Detector function : CISPR Q-Peak  
(2) IF band width : 9 kHz  
(3) Input impedance : 75 ohms
- b) Line impedance stabilized network (LISN)  
- Kyoritsu Electric Work CO., Ltd.  
Model : KNW-406  
50 ohms / 50 uH network
- c) Test Signal Generator (Multi Burst) - Shibasoku Co., Ltd.  
Model : 205
- d) Matching pad - Kyoritsu Electric Work Co., Ltd.  
Model : KPD-401

## 3. The spectrum was checked from 0.45 MHz to 30 MHz and the six highest emissions relative to the appropriate limit were measured and reported.

## 2) 15.109 Radiated Emission(Including Tuner, Without Accessories)

Video Signal	Frequency (MHz)	Meter Reading Open Volt. (dBuV)		Correction Factor (dB) Open Vol.	Emission & 3 meters(dBuV)	
		Horiz.	Vert.		Horiz.	Vert.
Multi Burst 1 V p-p	71.27	10.7	11.9	7.8	18.5	19.7
	143.18	10.6	11.3	17.2	27.8	28.5
	150.34	8.7	8.6	17.7	26.4	26.3
	171.82	15.8	8.9	18.6	34.4	27.5
	898.00	8.7	6.1	31.2	39.9	37.3
	1510.00	5.5	7.6	35.2	40.7	42.8
Multi Burst 5 V p-p	71.27	10.9	12.2	7.8	18.7	20.0
	143.18	11.7	11.2	17.2	28.9	28.4
	150.34	9.2	9.1	17.7	26.9	26.8
	171.82	15.8	9.0	18.6	34.4	27.6
	898.00	8.7	6.1	31.2	39.9	37.3
	1510.00	5.5	7.6	35.2	40.7	42.8
Internal Signal	71.27	10.4	11.6	7.8	18.2	19.4
	143.18	10.5	10.4	17.2	27.7	27.6
	150.34	6.2	5.8	17.7	23.9	23.5
	171.82	15.2	8.0	18.6	33.8	26.6
	898.00	8.7	6.1	31.2	39.9	37.3
	1510.00	5.5	7.6	35.2	40.7	42.8
RF/CATV Signal Input	71.27	10.8	11.8	7.8	18.6	19.6
	143.18	10.3	10.1	17.2	27.5	27.3
	150.34	6.6	6.3	17.7	24.3	24.0
	171.82	15.1	7.9	18.6	33.7	26.5
	898.00	8.7	6.1	31.2	39.9	37.3
	1510.00	5.5	7.6	35.2	40.7	42.8

Note: 1. Sample calculation at

M.B., 1 V p-p, Horiz. 71.27 MHz ;  $10.7 + 7.8 = 18.5$  (dBuV/m)

## 2. Measuring Instruments:

- a) Field strength meter - Rohde & Schwarz  
(for 30 MHz to 1G Hz) Model : ESVP  
(1) Frequency range : 20 MHz to 1300 MHz  
(2) RF Input : 50 ohm  
(3) IF band width : 7.5 kHz/12 kHz/120k Hz/1MHz  
(4) Detector function : Average/CISPR Q-Peak/Peak
- b) Spectrum Analyzer - ADVANTEST Co., Ltd.  
(for more than 1G Hz) Model : R3261A  
(1) Frequency range : 9 kHz to 2.6G Hz  
(2) RF Input : 50 ohm  
(3) IF band width : 30 Hz to 1 MHz  
200 Hz/9 kHz/120 kHz  
(4) Detector function : CISPR Q-Peak/Peak
- c) Test Signal Generator - Shibasoku Co., Ltd.  
(Multi Burst) Model : TG-5, 2U2
- d) Receiving antenna - Schwarzbeck  
Model : VHA9103 30 - 300 MHz  
Model : UHALP9107 300 - 1000 MHz  
- The Electro-Mechanics Company  
Model : 3115 I - 18G Hz

3. The spectrum was checked from 30 MHz to 1694 MHz and the six highest emissions relative to the appropriate limit were measured and reported.

## 2) 15.109 Radiated Emission(Including Tuner, With Accessories)

Video Signal	Frequency (MHz)	Meter Reading Open Volt. (dBuV)		Correction Factor (dB) Open Vol.	Emission & 3 meters(dBuV)	
		Horiz.	Vert.		Horiz.	Vert.
Multi Burst 1 V p-p	71.27	18.6	19.7	7.8	26.4	27.5
	143.18	14.3	13.6	17.2	31.5	30.8
	150.34	12.7	11.4	17.7	30.4	29.1
	171.82	17.2	8.8	18.6	35.8	27.4
	898.00	11.0	9.6	31.2	42.2	40.8
	1510.00	6.7	8.9	35.2	41.9	44.1
Multi Burst 5 V p-p	71.27	10.9	12.2	7.8	18.7	20.0
	143.18	11.7	11.2	17.2	28.9	28.4
	150.34	9.2	9.1	17.7	26.9	26.8
	171.82	17.7	9.4	18.6	36.3	28.0
	898.00	11.0	9.6	31.2	42.2	40.8
	1510.00	6.7	8.9	35.2	41.9	44.1
Internal Signal	71.27	18.0	19.2	7.8	25.8	27.0
	143.18	13.4	12.8	17.2	30.6	30.0
	150.34	12.8	11.0	17.7	30.5	28.7
	171.82	17.0	9.0	18.6	35.6	27.6
	898.00	11.0	9.6	31.2	42.2	40.8
	1510.00	6.7	8.9	35.2	41.9	44.1
RF/CATV Signal Input	71.27	18.1	19.5	7.8	25.9	27.3
	143.18	13.7	13.2	17.2	30.9	30.4
	150.34	12.6	11.8	17.7	30.3	29.5
	171.82	16.8	8.9	18.6	35.4	27.5
	898.00	11.0	9.6	31.2	42.2	40.8
	1510.00	6.7	8.9	35.2	41.9	44.1

Note: 1. Sample calculation at

M.B., 1 V p-p, Horiz. 71.27 MHz ;  $18.6 + 7.8 = 26.4$  (dBuV/m)

## 2. Measuring Instruments:

- a) Field strength meter - Rohde & Schwarz  
(for 30 MHz to 1G Hz) Model : ESVP  
(1) Frequency range : 20 MHz to 1300 MHz  
(2) RF Input : 50 ohm  
(3) IF band width : 7.5 kHz/12 kHz/120 kHz/1MHz  
(4) Detector function : Average/CISPR Q-Peak/Peak
- b) Spectrum Analyzer - ADVANTEST Co., Ltd.  
(for more than 1G Hz) Model : R3261A  
(1) Frequency range : 9 kHz to 2.6G Hz  
(2) RF Input : 50 ohm  
(3) IF band width : 30 Hz to 1 MHz  
200 Hz/9 kHz/120 kHz  
(4) Detector function : CISPR Q-Peak/Peak
- c) Test Signal Generator - Shibasoku Co., Ltd.  
(Multi Burst) Model : TG-5, 2U2
- d) Receiving antenna - Schwarzbeck  
Model : VHA9103 30 - 300 MHz  
Model : UHALP9107 300 - 1000 MHz  
- The Electro-Mechanics Company  
Model : 3115 I - 18G Hz

3. The spectrum was checked from 30 MHz to 1694 MHz and the six highest emissions relative to the appropriate limit were measured and reported.

## 3) 15.111 (a) Antenna Power Conducted Voltage

Frequency (MHz)	Meter Reading (dBuV)	Matc. Pad Loss (dB)	Interference (dBuV)
413.0	33.9	8.8	42.7
419.0	33.1	8.8	41.9
1162.0	33.4	8.8	42.2
1166.0	33.7	8.8	42.5
1174.0	34.2	8.8	43.0
1178.0	33.6	8.8	42.4

Antenna Input Impedance: 75 ohms (Unbalanced)

Note:

1. Sample calculation at 413.0 MHz ; 33.9 + 8.8 = 42.7 (dBuV)
2. Measuring Instrument:
  - a) Spectrum Analyzer - ADVANTEST Co., Ltd.  
Model : R3261A  
(1) Detector function : Peak  
(2) Band width : 300 kHz
  - b) Matching Pad - Anritsu Electric Co., Ltd.  
Model : MB-009  
(1) Frequency range : DC - 2G Hz
3. The spectrum was checked from 30 MHz to 1694 MHz and the six highest emissions relative to the appropriate limit were measured and reported.

## 4) 15.115 (b) (1) Output Signal Level

Video Signal	Ch	Measured Frequency(MHz)		Meter Reading (dBuV)		Pad Loss (dB)	Output Signal Level (dBuV)	
		Visual	Aural	Visual	Aural		Visual	Aural
Multi Burst 1 V p-p	3	61.25	65.75	63.7	50.6	2.3	66.0	52.9
	4	67.25	71.75	63.6	50.3	2.3	65.9	52.6
Multi Burst 5 V p-p	3	61.25	65.75	63.7	50.6	2.3	66.0	52.9
	4	67.25	71.75	63.6	50.3	2.3	65.9	52.6
Internal Signal	3	61.25	65.75	63.7	50.6	2.3	66.0	52.9
	4	67.25	71.75	63.6	50.3	2.3	65.9	52.6
RF/CATV Signal	3	61.25	65.75	63.7	50.6	2.3	66.0	52.9
	4	67.25	71.75	63.6	50.3	2.3	65.9	52.6

RF Output Impedance: 75 ohms (Unbalanced)

Note:

1. Sample calculation at

M.B., 1 V p-p, Visual, 3 Ch ;  $63.7 + 2.3 = 66.0$  (dBuV)

2. Measuring Instrument:

- a) Spectrum Analyzer - Anritsu Electric Co., Ltd.  
Model : MS62B  
(1) Detector function : Peak  
(2) Band width : 300 kHz
- b) Matching Pad - Anritsu Electric Co., Ltd.  
Model : MP614A  
(1) Frequency range : 10 - 1200 MHz
- c) Test Signal Generator (Multi Burst) - Shibasoku Co., Ltd.  
Model : 205

Part 15 Subpart B, (TV Interface Device)

5) 15.115 (b) (2) Output Terminal Conducted Interference

Video Signal	C h	Freq. (MHz)	Meter Read. (dBUV)	Matc. Pad Loss (dB)	Att. Pad Loss(dB)	Gain of Amp.(dB)	Interference (dBUV)	
Multi Burst 1 V p-p	3	47.75	40.1	2.3	N/A	24.3	18.1	
		74.75	38.1	2.3	N/A	24.4	16.0	
		118.00	39.8	2.3	N/A	24.3	17.8	
		122.50	44.0	2.3	N/A	24.3	22.0	
		127.00	42.1	2.3	N/A	24.3	20.1	
		183.75	38.6	2.3	N/A	24.3	16.6	
	4	53.75	39.2	2.3	N/A	24.3	17.2	
		80.75	37.0	2.3	N/A	24.4	14.9	
		130.00	45.3	2.3	N/A	24.3	23.3	
		134.50	53.9	2.3	N/A	24.3	31.9	
		139.00	49.3	2.3	N/A	24.3	27.3	
		201.75	35.8	2.3	N/A	24.3	13.8	
	Multi Burst 5 V p-p	3	47.75	40.1	2.3	N/A	24.3	18.1
			74.75	38.1	2.3	N/A	24.4	16.0
118.00			39.8	2.3	N/A	24.3	17.8	
122.50			44.0	2.3	N/A	24.3	22.0	
127.00			42.1	2.3	N/A	24.3	20.1	
183.75			38.6	2.3	N/A	24.3	16.6	
4		53.75	39.2	2.3	N/A	24.3	17.2	
		80.75	37.0	2.3	N/A	24.4	14.9	
		130.00	45.3	2.3	N/A	24.3	23.3	
		134.50	53.9	2.3	N/A	24.3	31.9	
		139.00	49.3	2.3	N/A	24.3	27.3	
		201.75	35.8	2.3	N/A	24.3	13.8	
Internal Signal		3	47.75	40.1	2.3	N/A	24.3	18.1
			74.75	38.1	2.3	N/A	24.4	16.0
	118.00		39.8	2.3	N/A	24.3	17.8	
	122.50		44.0	2.3	N/A	24.3	22.0	
	127.00		42.1	2.3	N/A	24.3	20.1	
	183.75		38.6	2.3	N/A	24.3	16.6	
	4	53.75	39.2	2.3	N/A	24.3	17.2	
		80.75	37.0	2.3	N/A	24.4	14.9	
		130.00	45.3	2.3	N/A	24.3	23.3	
		134.50	53.9	2.3	N/A	24.3	31.9	
		139.00	49.3	2.3	N/A	24.3	27.3	
		201.75	35.8	2.3	N/A	24.3	13.8	
	RF/CATV Signal Input	3	47.75	40.1	2.3	N/A	24.3	18.1
			74.75	38.1	2.3	N/A	24.4	16.0
118.00			39.8	2.3	N/A	24.3	17.8	
122.50			44.0	2.3	N/A	24.3	22.0	
127.00			42.1	2.3	N/A	24.3	20.1	
183.75			38.6	2.3	N/A	24.3	16.6	
4		53.75	39.2	2.3	N/A	24.3	17.2	
		80.75	37.0	2.3	N/A	24.4	14.9	
		130.00	45.3	2.3	N/A	24.3	23.3	
		134.50	53.9	2.3	N/A	24.3	31.9	
		139.00	49.3	2.3	N/A	24.3	27.3	
		201.75	35.8	2.3	N/A	24.3	13.8	

Note:

1. Sample calculation at

M.B., 1 V p-p, 3 Ch., 47.75 MHz ;  $40.1 + 2.3 - 24.3 = 18.1$  (dBuV)

2. Measuring Instrument:

- a) Spectrum Analyzer - Anritsu Electric Co., Ltd.  
Model : MS62B  
(1) Detector function : Peak  
(2) Band width : 300 kHz
- b) Matching Pad - Anritsu Electric Co., Ltd.  
Model : MP614A  
(1) Frequency range : 10 - 1200 MHz
- c) Test Signal Generator (Multi Burst) - Shibasoku Co., Ltd.  
Model : 205
- d) Amplifier - Hewlett Packard  
Model : 8447F

3. The spectrum was checked from 30 MHz to 1000 MHz and the six highest emissions relative to the appropriate limit were measured and reported.

## 6) 15.115 (c) Transfer Switch Isolation

Video Signal	Ch	Meter Read.(DbuV)	Matching Pad Loss(dB)	Gain of Amp.(dB)	Pad Loss (dB)	Level (dBuV)
Multi Burst 1 V p-p	3	26.3	2.3	24.4	N/A	4.2
	4	28.1	2.3	24.4	N/A	6.0
Multi Burst 5 V p-p	3	26.3	2.3	24.4	N/A	4.2
	4	28.1	2.3	24.4	N/A	6.0
Internal Signal	3	26.3	2.3	24.4	N/A	4.2
	4	28.1	2.3	24.4	N/A	6.0

RF Output Impedance: 75 ohms (Unbalanced)

Note:

1. Sample calculation at

$$\text{M.B., 1 V p-p, Visual, 3 Ch ; } 26.3 + 2.3 - 24.4 = 4.2 \text{ (dBuV)}$$

2. Measuring Instrument:

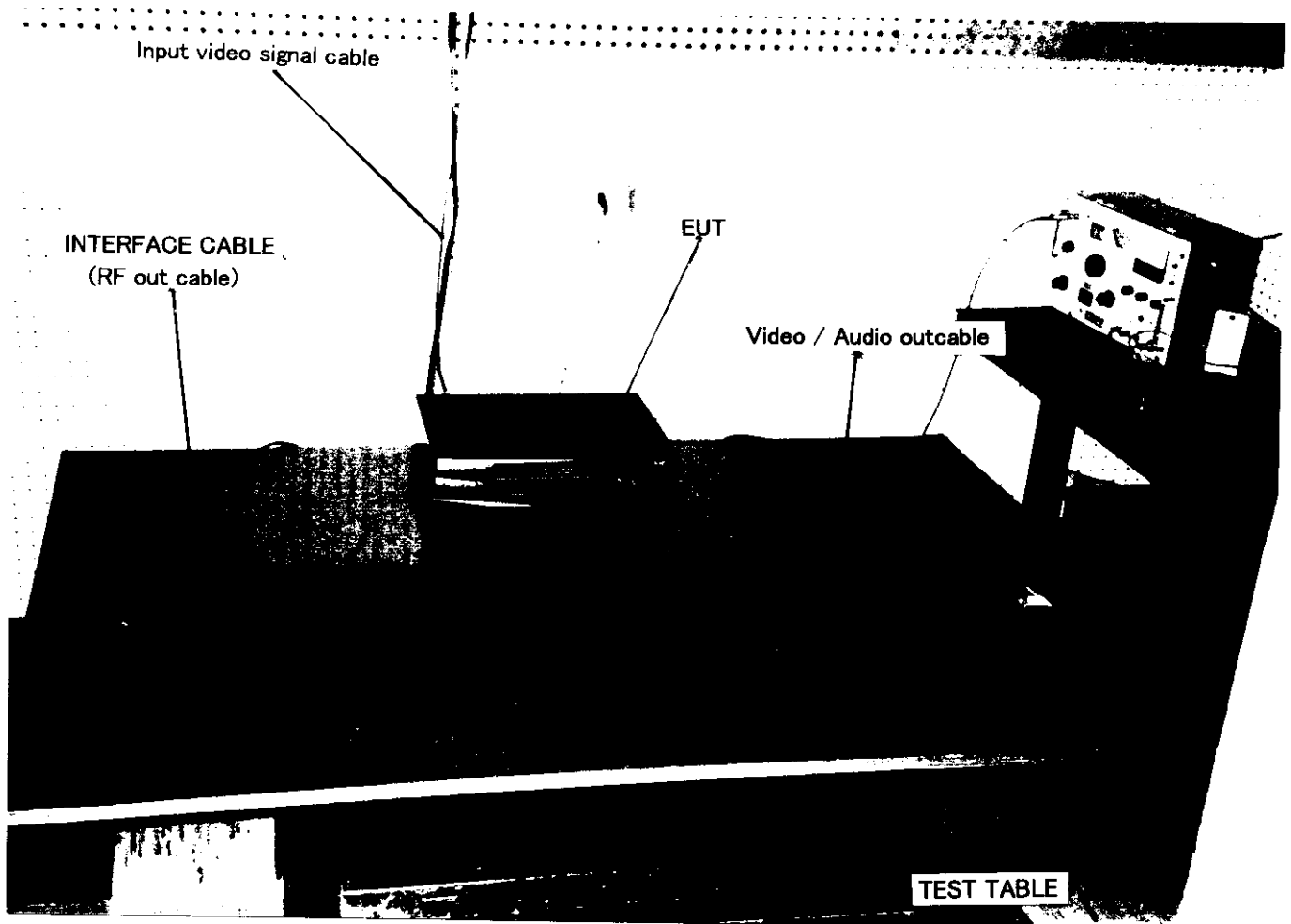
- a) Spectrum Analyzer - Anritsu Electric Co., Ltd.  
 Model : MS62B  
 (1) Detector function : Peak  
 (2) Band width : 300 kHz
- b) Matching Pad - Anritsu Electric Co., Ltd.  
 Model : MP614A  
 (1) Frequency range : 10 - 1200 MHz
- c) Test Signal Generator (Multi Burst) - Shibasoku Co., Ltd.  
 Model : 205
- d) Amplifier - Hewlett Packard  
 Model : 8447F

15.107 POWER LINE CONDUCTED VOLTAGE

- CONFIGURATION OF THE EQUIPMENT UNDER TEST -

( Arrangement of interface cable on the test table )

EXHIBIT # : 3  
FCC ID : ACJ927128AH  
OUR REF. : MKES99-F018  
MODEL NO. : PV-V4520  
Sheet 10 of 15 Sheets

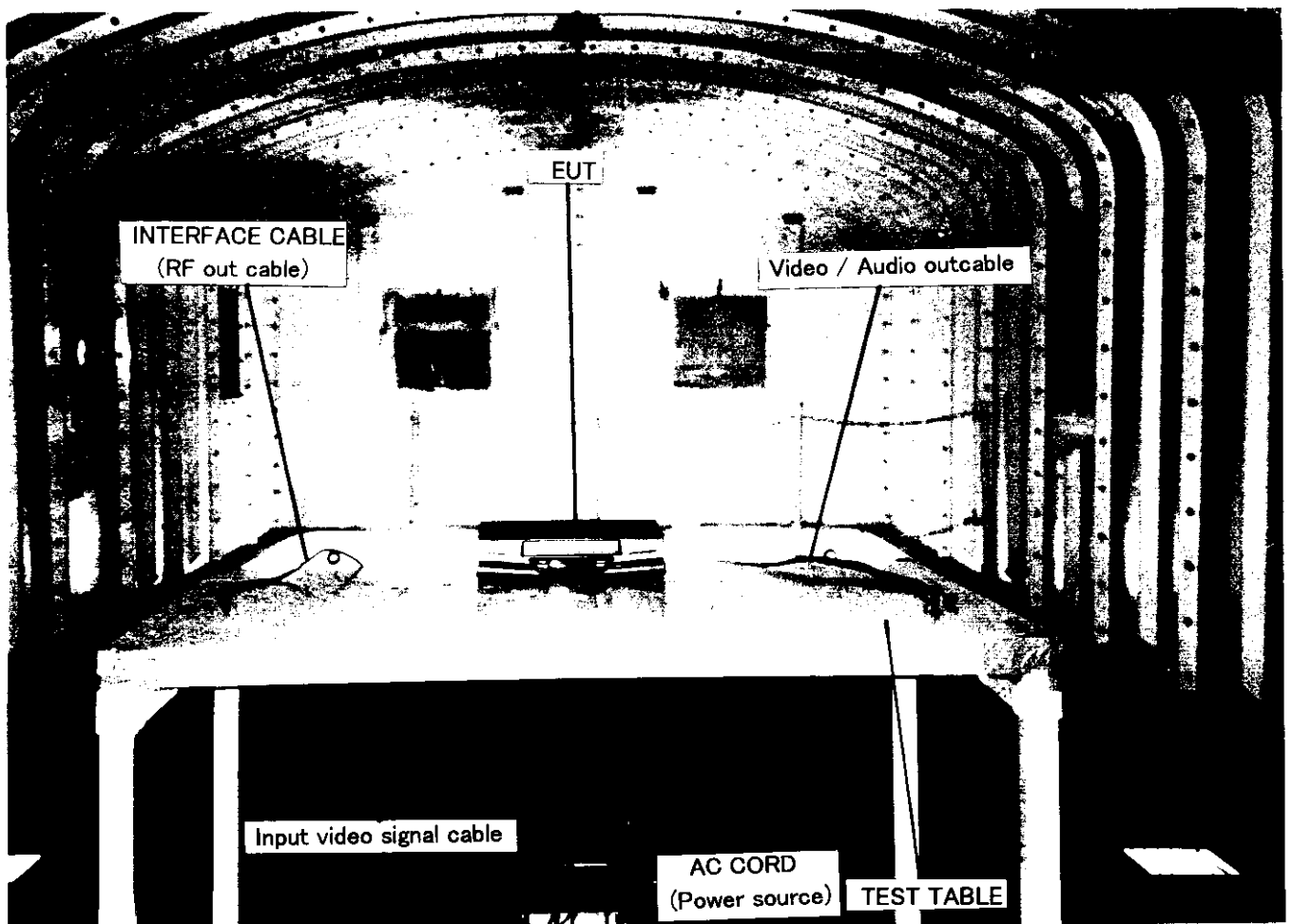


15.107 POWER LINE CONDUCTED VOLTAGE

- CONFIGURATION OF THE EQUIPMENT UNDER TEST -

( Arrangement of interface cable on the test table )

EXHIBIT # : 3  
FCC ID : ACJ927128AH  
OUR REF. : MKES99-F018  
MODEL NO. : PV-V4520  
Sheet 11 of 15 Sheets  
Page 1/2

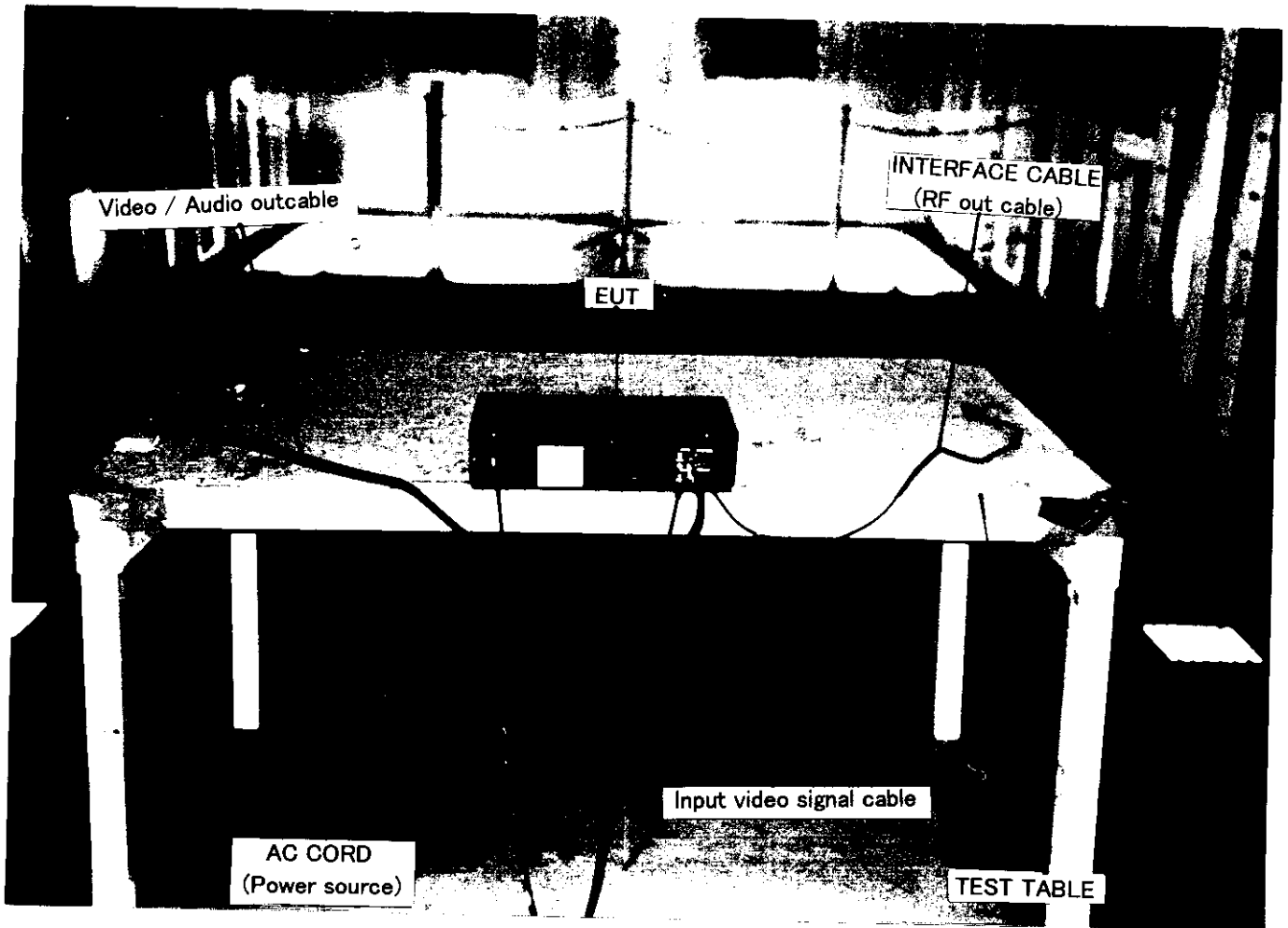


15.109 RADIATED EMISSION

- CONFIGURATION OF THE EQUIPMENT UNDER TEST -

( Arrangement of interface cable on the test table )

EXHIBIT # : 3  
FCC ID : ACJ927128AH  
OUR REF. : MKES99-F018  
MODEL NO. : PV-V4520  
Sheet 11 of 15 Sheets  
Page 2/2





NO 8-323-5

KNW-406 LISN

LISN FACTOR (K)

Frequency (MHz)

6  
5  
4  
3  
2  
1  
0

0.001

0.002

0.003

0.005

0.007

0.01

0.02

0.03

0.05

0.07

0.1

0.2

0.3

0.5

0.7

1

2

3

5

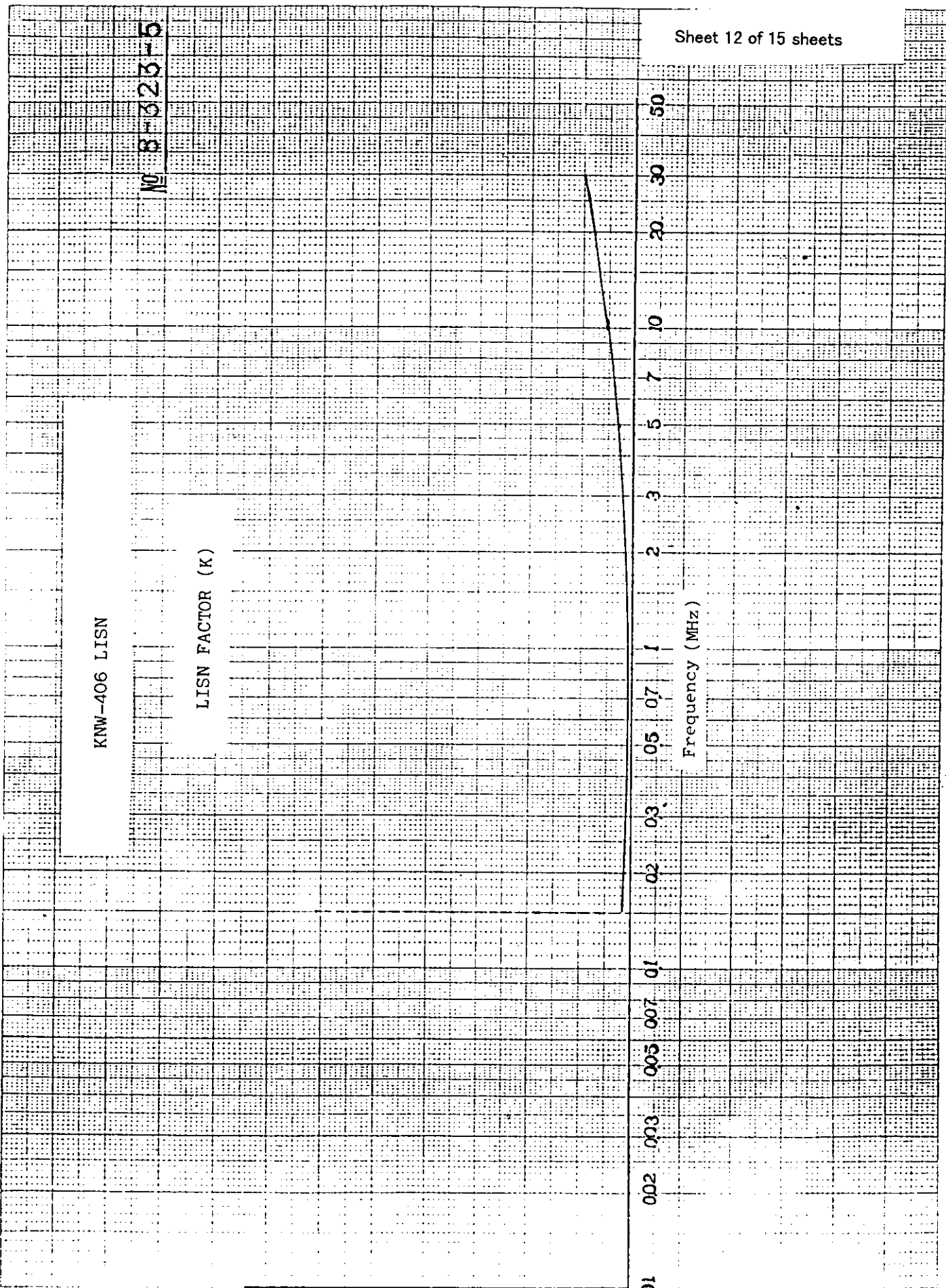
7

10

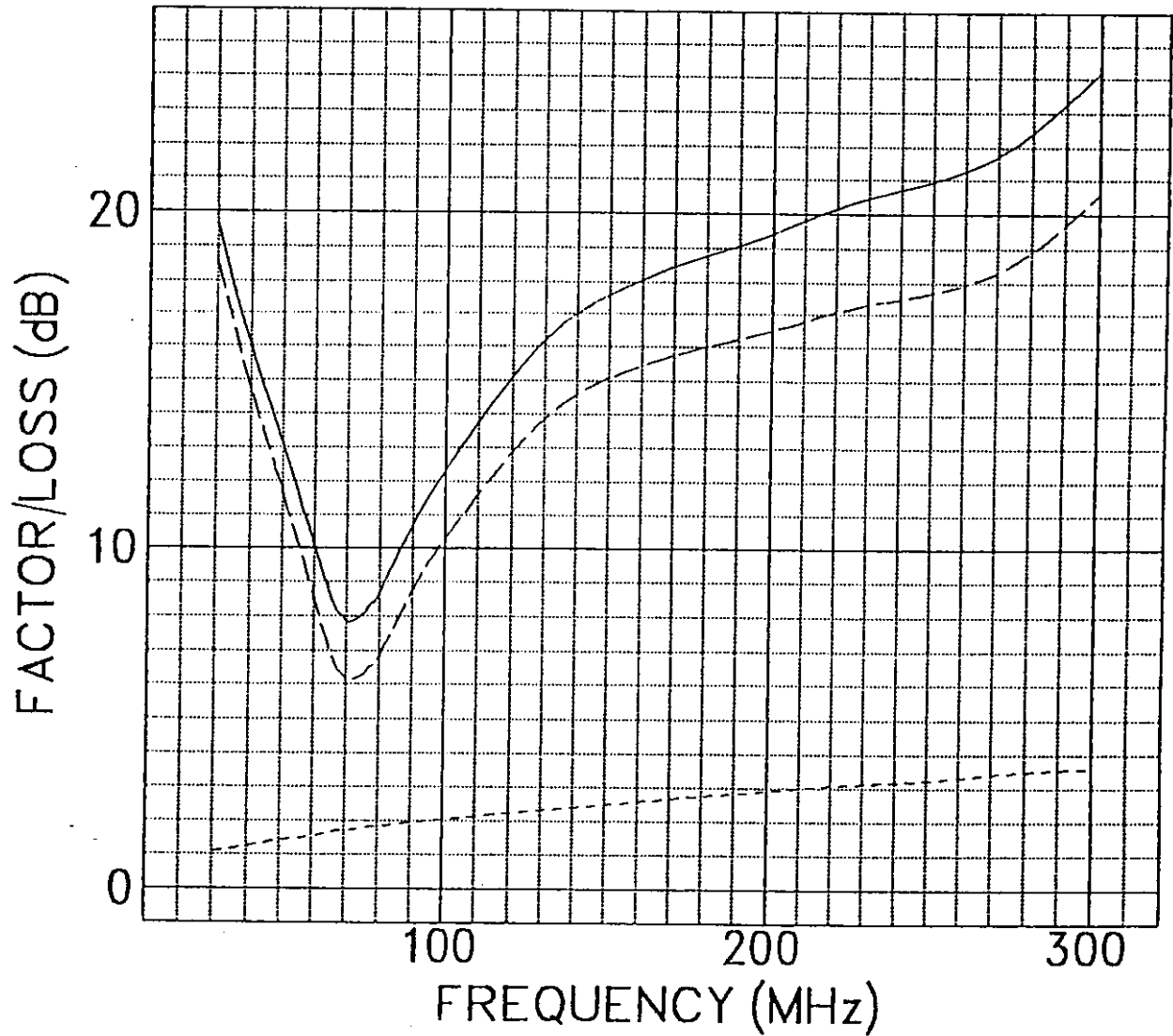
20

30

50



# CORRECTION FACTOR OF BBA9106



$E = V + K$

E : Field Strength

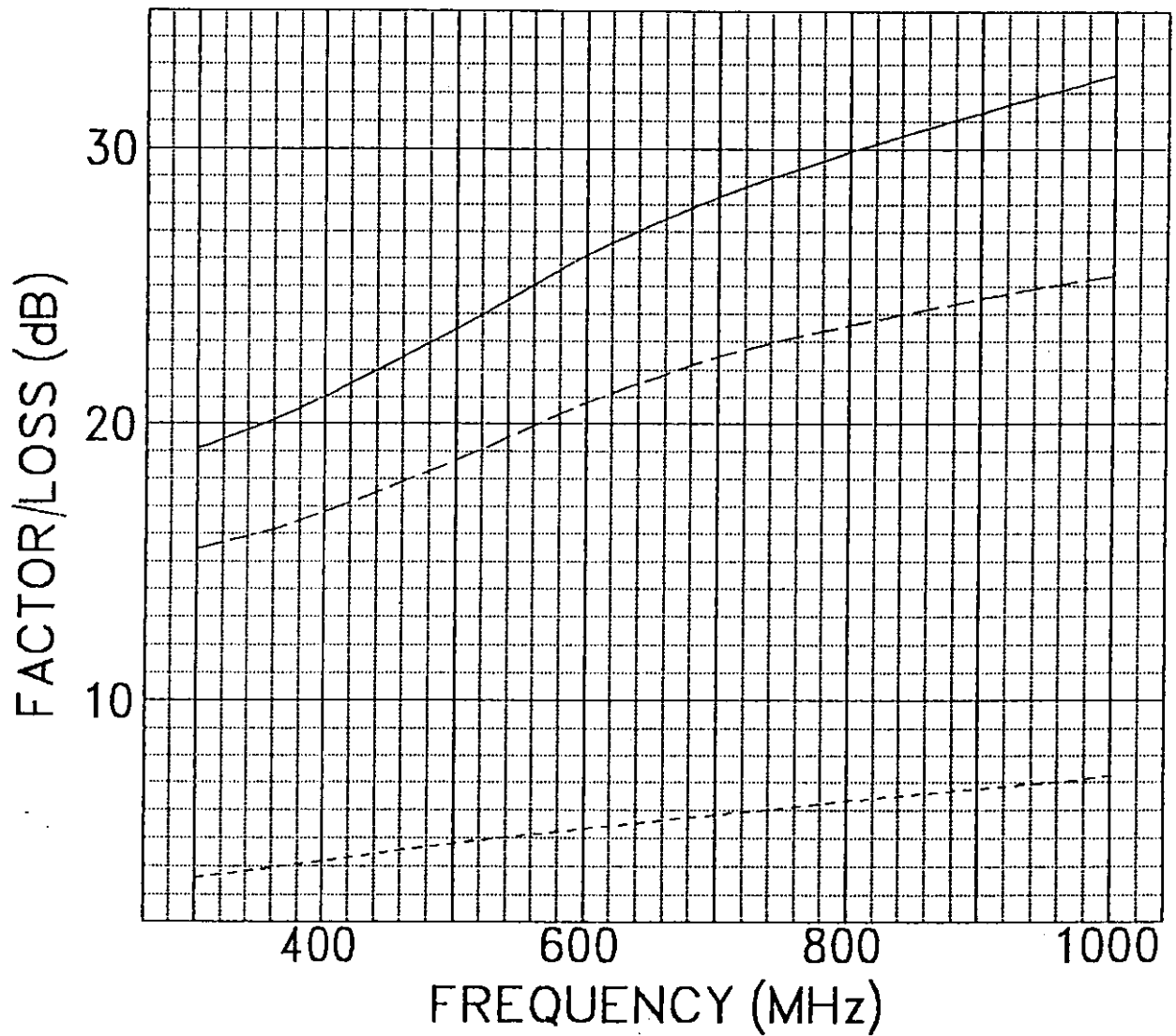
V : Correction Factor (dB)

———— : Correction Factor

----- : Antenna Factor

..... : Cable Loss

# CORRECTION FACTOR OF UHALP9107



$E = V + K$

E : Field Strength

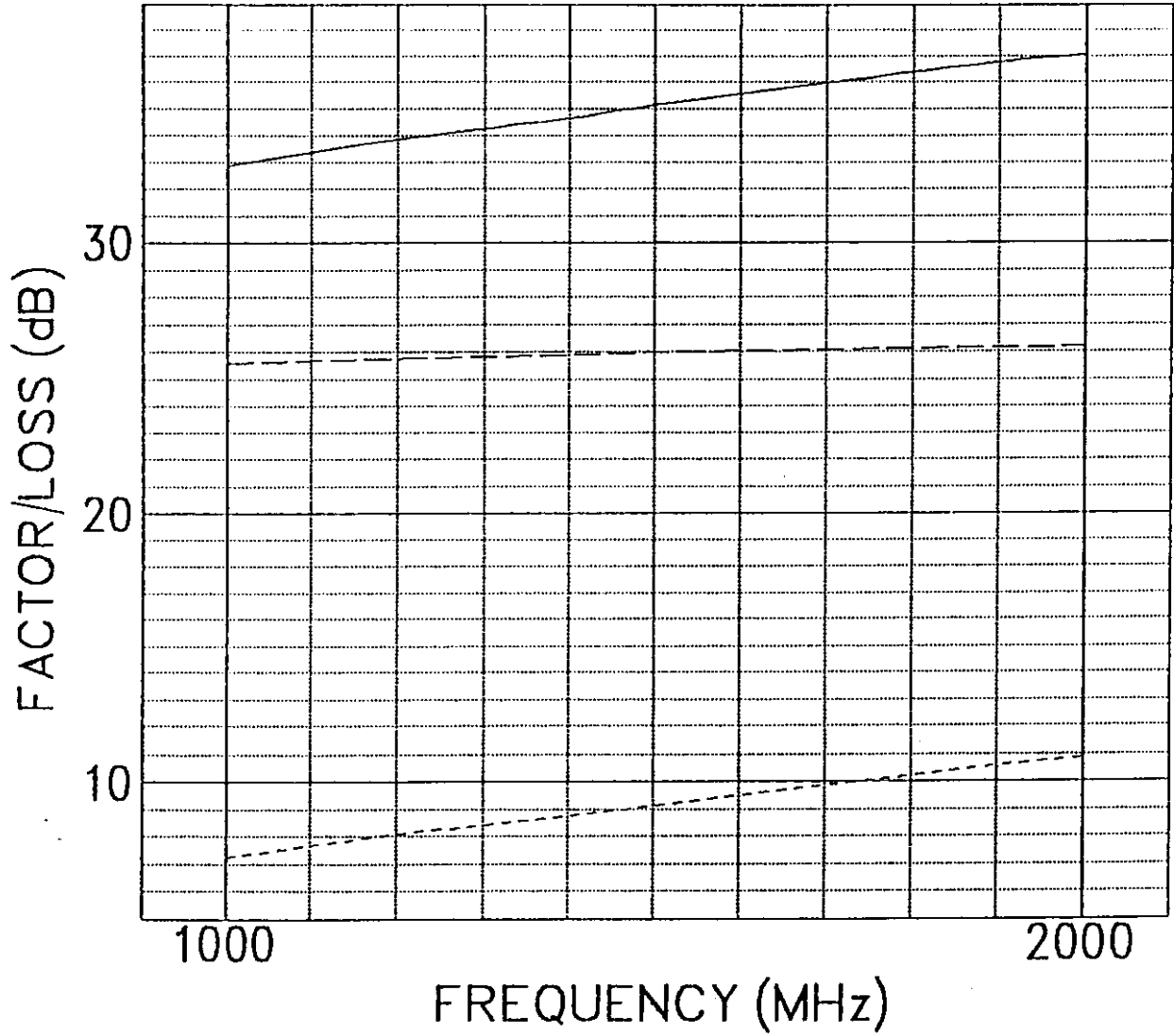
V : Correction Factor (dB)

———— : Correction Factor

----- : Antenna Factor

..... : Cable Loss

# CORRECTION FACTOR OF 3115



$E = V + K$

E : Field Strength

V : Correction Factor (dB)

———— : Correction Factor

----- : Antenna Factor

..... : Cable Loss

Technical Specification

EXHIBIT # : 4-1  
FCC ID : ACJ927128AH  
OUR REF. : MKES99-F018  
MODEL NO. : PV-V4520

Power Source : AC 120 V, 60 Hz

Power Consumption : Approx. 23W

Television System : EIA Standard (525 lines, 60 fields) NTSC  
Luminance : Frequency modulation  
Color Signal : converted sub carrier direct recording

Audio Track : 1 track (Normal) 2 Channels (Hi-Fi Sound)

Tape Format : Tape width 1/2" (12.7 mm), high density tape

Tape Speed : 33.35 mm/sec. at SP mode  
16.67 mm/sec. at LP mode  
11.12 mm/sec. at SLP mode

Record/Playback Time : 480 min. (max.)

FF/REW Time : Less than 5 min.(T-120)

Heads : Video : 4 rotary heads  
Audio : 1 stationary head (Normal)  
2 rotary heads (Hi-Fi Sound)  
Control : 1 stationary head  
Erase : 1 full track

Input Level : Video : Video Input Connector 1.0 V p-p, 75 ohms  
Audio : Audio Input Connector -10 dBV, 47k ohms

Output Level : Video : Video Output Connector 1.0 V p-p, 75 ohms  
Audio : Audio Output Connector -8 dBV, 600 ohms

RF Modulated Output : Channel 3 and 4 (selective)

RF Input : Same as conventional TV receiver

Video Horizontal Resolution : Color & B/W : More than 230 lines (VHS mode)  
(on mono scope test pattern)

Audio Frequency Response : 100 Hz - 8 kHz at SP mode (Normal Audio Sound)  
20 Hz-20 kHz (Hi-Fi Audio Sound)

Signal to Noise Ratio : Video : More than 43 dB at SP mode (VHS)  
Audio : More than 42 dB at SP mode (Normal)  
More than 60 dB (Hi-Fi)

Operating Humidity : 10 % - 75 %

Operating Temperature : 41°F - 104°F (5°C - 40°C)

Description of RF Converter Circuit

Page 1/3

EXHIBIT # : 4-2  
FCC ID : ACJ927128AH  
OUR REF. : MKES99-F018  
MODEL NO. : PV-V4520

1) Type(s) of emission

Not applicable

2) Frequency range

USA standard broadcasting signal CHANNEL 3 & 4

3) Range of operating power and description of means provided for Variation of operating power

Not applicable

4) Maximum power rating as defined in the applicable rules

Not applicable

5) Tune up procedure over the power range or at specific operating power levels

Not applicable

6) A description of all circuitry and devices provided for determining and stabilizing frequency

**Video Carrier Frequency**

Frequency of video carrier output is determined by output of PLL1.  
Consequently, the frequency stability is determined by PLL1 which is nominally  $\pm 0.2\%$ .

**Audio Carrier Frequency**

Audio Carrier Frequency is generated by mixing of video carrier and output signal of the FM-OSC circuit in the RF-MIXER circuit of IC201.

The output signal of the FM-OSC circuit is generated by modulating of audio input signal and output signal of PLL2(4.5MHz)

Frequency of audio carrier output is determined by output of PLL2.

The frequency stability is determined by PLL2 and maintained within  $\pm 0.2\%$ .

7) A description of any circuits or devices employed for suppression of spurious radiation, for limiting modulation, and for limiting the operating power.

a. **Suppression of Spurious Radiation**

Low Pass Filter consisted of L1 and C1

**b. Limit of Modulation**

Modulations for video carrier and audio carrier are limited, because both inputs supplied from VCR are maintained constant.

**c. Limit of Operating Power**

Not applicable

**8) Function of each electron tube, semiconductor or other active circuit device**

**RF oscillator (IC201)**

The video carrier frequency is generated by RF oscillator circuit and controlled by PLL1 circuit.

Generated video carrier frequency is supplied to RF MIXER circuit through the Buffer Amplifier.

**RF MIXER (IC201)**

The output of RF oscillator and video signal from white clip circuit are supplied to RF MIXER.

Amplitude modulated video carrier is obtained as RF output through the buffer amplifier.

FM modulated audio signal is supplied to RF MIXER from FM oscillator.

The output of RF oscillator is made both side-band modulation by FM modulated audio signal, as result, audio carrier is obtained as RF output through the buffer amplifier

**Clamp and White Clip (IC201)**

The video input is clamped by Sync-Chip. It prevents from over-modulation.

**RF MIXER (IC201)**

The oscillated frequency is adjusted to 4.5MHz by PLL2

Audio signal is supplied to the FM oscillator FM modulated audio carrier is obtained as an output.

**Low Pass Filter (L1, C1)**

The low pass filter is provided for minimize the spurious radiation in RF signal.

**REF oscillator (IC201)**

Each reference frequency that generated in REF oscillator circuit is supplied to PLL1 and PLL2 for control of RF oscillator and FM oscillator.

**Carrier OFF SW**

When TV side selected by TV/VCR SW, carrier OFF SW circuit shut off power of the RF oscillator circuit and RF MIXER circuit.