

MATSUSHITA-KOTOBUKI ELECTRONICS INDUSTRIES LTD.

SAIJO DIVISION

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TELEPHONE: +81-897-56-1111 FAX: +81-897-56-8142

Date: Sept. 16, 1999

Report of Measurements (Part I)

REQUIRED IN () SUBPART B (TV INTERFACE DEVICE)
(X) SUBPART B (DIGITAL DEVICE)

EXHIBIT # : 3-1
FCC ID : ACJ927124K
OUR REF. : MKES99-F019
MODEL NO. : PV-DV1999D
Sheet 1 of 16 Sheets

Name of Manufacturer: Matsushita-Kotobuki Electronics Industries Ltd.

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

Device Under Measurement

FCC ID : ACJ927124K
Model No. : PV-DV1999D
Trade Name : Panasonic
Applicant : Matsushita Electric Ind. Co., Ltd.

Certification

On the basis of the measurement data contained in Part II, all devices bearing the aforementioned 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.

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EXHIBIT # : 3-1
FCC ID : ACJ927124K
OUR REF. : MKES99-F019
MODEL NO. : PV-DV1999D
Sheet 2 of 16 Sheets

DV Mode

Part 15 Subpart B. (Digital Device) - Part II

1) 15.107 Power Line Conducted Voltage

Freq. (MHz)	Limits (dBuV)	Interference (dBuV)	
		1-end & Grounded	The other- End & Gro.
2.60	48.0	42.6	41.7
2.85	48.0	44.1	45.1
4.86	48.0	42.2	42.5
5.36	48.0	42.0	42.7
5.53	48.0	41.8	42.6
5.61	48.0	42.0	42.8

(Refer to Sheet 4, 8, 14 of 16 Sheets)

2) 15.109 Radiated Emission

Freq. (MHz)	Limits (dBuV/m)	Emission (dBuV/m)	
		Horiz.	Vert.
94.50	43.5	37.1	35.2
121.50	43.5	38.5	31.5
148.50	43.5	37.4	33.7
202.50	43.5	36.9	34.9
229.50	46.0	40.8	32.2
256.50	46.0	37.1	31.0

(Refer to Sheet 6, 10, 11, 15, 16 of 16 Sheets)

MEASUREMENT SITE : MKS SITE

MEASUREMENT 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

MATSUSHITA-KOTOBUKI ELECTRONICS INDUSTRIES LTD.

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EXHIBIT # : 3-1
 FCC ID : ACI927124K
 OUR REF. : MKES99-F019
 MODEL NO. : PV-DV1999D

Serial Mode

Part 15 Subpart B. (Digital Device) - Part II

Sheet 3 of 16 Sheets

1) 15.107 Power Line Conducted Voltage

Freq. (MHz)	Limits (dBuV)	Interference (dBuV)	
		1-end & Grounded	The other- End & Gro.
2.42	48.0	41.5	41.2
2.67	48.0	41.8	40.9
2.92	48.0	42.8	41.3
4.84	48.0	39.9	40.7
4.92	48.0	40.0	40.5
5.17	48.0	39.8	40.5

(Refer to Sheet 5, 9, 14 of 16 Sheets)

2) 15.109 Radiated Emission

Freq. (MHz)	Limits (DbuV/m)	Emission (dBuV/m)	
		Horiz.	Vert.
94.50	43.5	34.8	33.5
121.50	43.5	37.2	30.7
148.50	43.5	35.8	32.6
202.50	43.5	37.0	35.2
229.50	46.0	39.6	31.9
256.50	46.0	38.5	32.4

(Refer to Sheet 7, 12, 13, 15, 16 of 16 Sheets)

MEASUREMENT SITE : MKS SITE

MEASUREMENT 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 Pules under normal use and maintenance.



T. Watanabe

EXHIBIT # : 3-1
 FCC ID : ACJ927124K
 OUR REF. : MKES99-F019
 MODEL NO. : PV-DV1999D

Sheet 4 of 16 Sheets

DV Mode

1) 15.107 Power Line Conducted Voltage

Freq. (MHz)	Meter Reading (dBuV)		LISN Factor (dB)	Matching Pad Loss (dB)	Interference (dBuV)	
	1-end & Grounded	The other-End & Gro.			1-end & Grounded	The other-End & Gro
2.60	36.1	35.2	0.3	6.2	42.6	41.7
2.85	37.6	38.6	0.3	6.2	44.1	45.1
4.86	35.7	36.0	0.3	6.2	42.2	42.5
5.36	35.4	36.1	0.4	6.2	42.0	42.7
5.53	35.2	36.0	0.4	6.2	41.8	42.6
5.61	35.4	36.2	0.4	6.2	42.0	42.8

Note:

1. Sample calculation at

1-end & Gro., 2.60 MHz ; $36.1 + 0.3 + 6.2 = 42.6$ (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, KNW-407
 50 ohms / 50 uH network
- c) 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.

EXHIBIT # : 3-1
 FCC ID : ACJ927124K
 OUR REF. : MKES99-F019
 MODEL NO. : PV-DV1999D

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Serial Mode

2) 15.107 Power Line Conducted Voltage

Freq. (MHz)	Meter Reading (dBuV)		LISN Factor (dB)	Matching Pad Loss (dB)	Interference (dBuV)	
	1-end & Grounded	The other-End & Gro.			1-end & Grounded	The other-End & Gro
2.42	35.1	34.8	0.2	6.2	41.5	41.2
2.67	35.3	34.4	0.3	6.2	41.8	40.9
2.92	36.3	34.8	0.3	6.2	42.8	41.3
4.84	33.4	34.2	0.3	6.2	39.9	40.7
4.92	33.5	34.0	0.3	6.2	40.0	40.5
5.17	33.2	33.9	0.4	6.2	39.8	40.5

Note:

1. Sample calculation at

1-end & Gro., 2.42 MHz ; $35.1 + 0.2 + 6.2 = 41.5$ (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, KNW-407
 50 ohms / 50 uH network
- c) 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.

EXHIBIT # : 3-1

FCC ID : ACJ927124K

OUR REF. : MKES99-F019

MODEL NO. : PV-DV1999D

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DV Mode

3) 15.109 Radiated Emission

Freq. (MHz)	Meter Reading Open Volt. (dBuV)		Correction Factor (dB) Open Vol.	Emission at 3 meters (DbuV)	
	Horiz.	Vert.		Horiz.	Vert.
94.50	25.7	23.8	11.4	37.1	35.2
121.50	23.1	16.1	15.4	38.5	31.5
148.50	19.8	16.1	17.6	37.4	33.7
202.50	17.4	15.4	19.5	36.9	34.9
229.50	20.3	11.7	20.5	40.8	32.2
256.50	16.0	9.9	21.1	37.1	31.0

Note:

1. Sample calculation at

Horiz., 94.50 MHz ; $25.7 + 11.4 = 37.1$ (dBuV/m)

2. Measuring Instruments:

a) Field strength meter
(for 30 MHz to 1 G Hz)

- Rohde & Schwarz

Model : ESVP

(1) Frequency range : 20 MHz to 1300 MHz

(2) RF Input : 50 ohms

(3) IF band width : 7.5 kHz / 12 kHz/
120 kHz / 1 MHz

(4) Detector function: Average/

CISPR Q-PERK/PERK

c) Receiving antenna

- Schwarzbeck

Model : VHA9103 30 - 300 MHz

Model : UHALP9107 300 - 1000 MHz

- The Electro-Mechanics Company

Model : 3115 1 - 18 GHz

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.

Serial Mode

4) 15.109 Radiated Emission

Freq. (MHz)	Meter Reading Open Volt. (dBuV)		Correction Factor (dB) Open Vol.	Emission at 3 meters (dBuV)	
	Horiz.	Vert.		Horiz.	Vert.
94.50	23.4	22.1	11.4	34.8	33.5
121.50	21.8	15.3	15.4	37.2	30.7
148.50	18.2	15.0	17.6	35.8	32.6
202.50	17.5	15.7	19.5	37.0	35.2
229.50	19.1	11.4	20.5	39.6	31.9
256.50	17.4	11.3	21.1	38.5	32.4

Note:

1. Sample calculation at

Horiz., 94.50 MHz ; 23.4 + 11.4 = 34.8 (dBuV/m)

2. Measuring Instruments:

- a) Field strength meter - Rohde & Schwarz
 (for 30 MHz to 1 GHz) Model : ESVP
- (1) Frequency range : 20 MHz to 1300 MHz
 - (2) RF Input : 50 ohms
 - (3) IF band width : 7.5 kHz / 12 kHz/
120 kHz / 1 MHz
 - (4) Detector function: Average/
CISPR Q-PERK/PERK
- c) Receiving antenna - Schwarzbeck
- Model : VHA9103 30 - 300 MHz
 - Model : UHALP9107 300 - 1000 MHz
- The Electro-Mechanics Company
 Model : 3115 1 - 18 GHz

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.

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FCC ID : ACI927124K
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MODEL NO. : PV-DV1999D

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JIS A4 180 × 250 mm

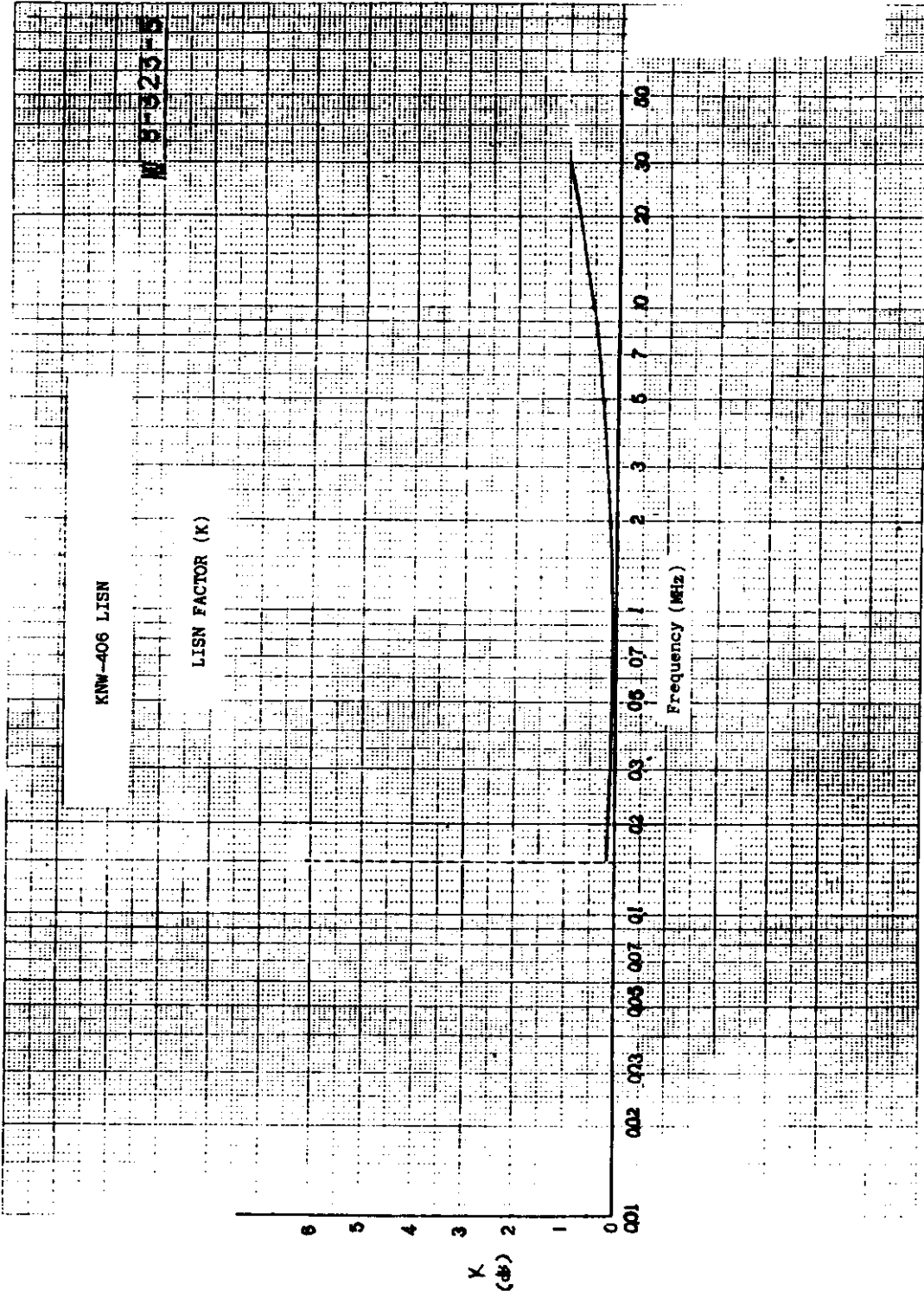
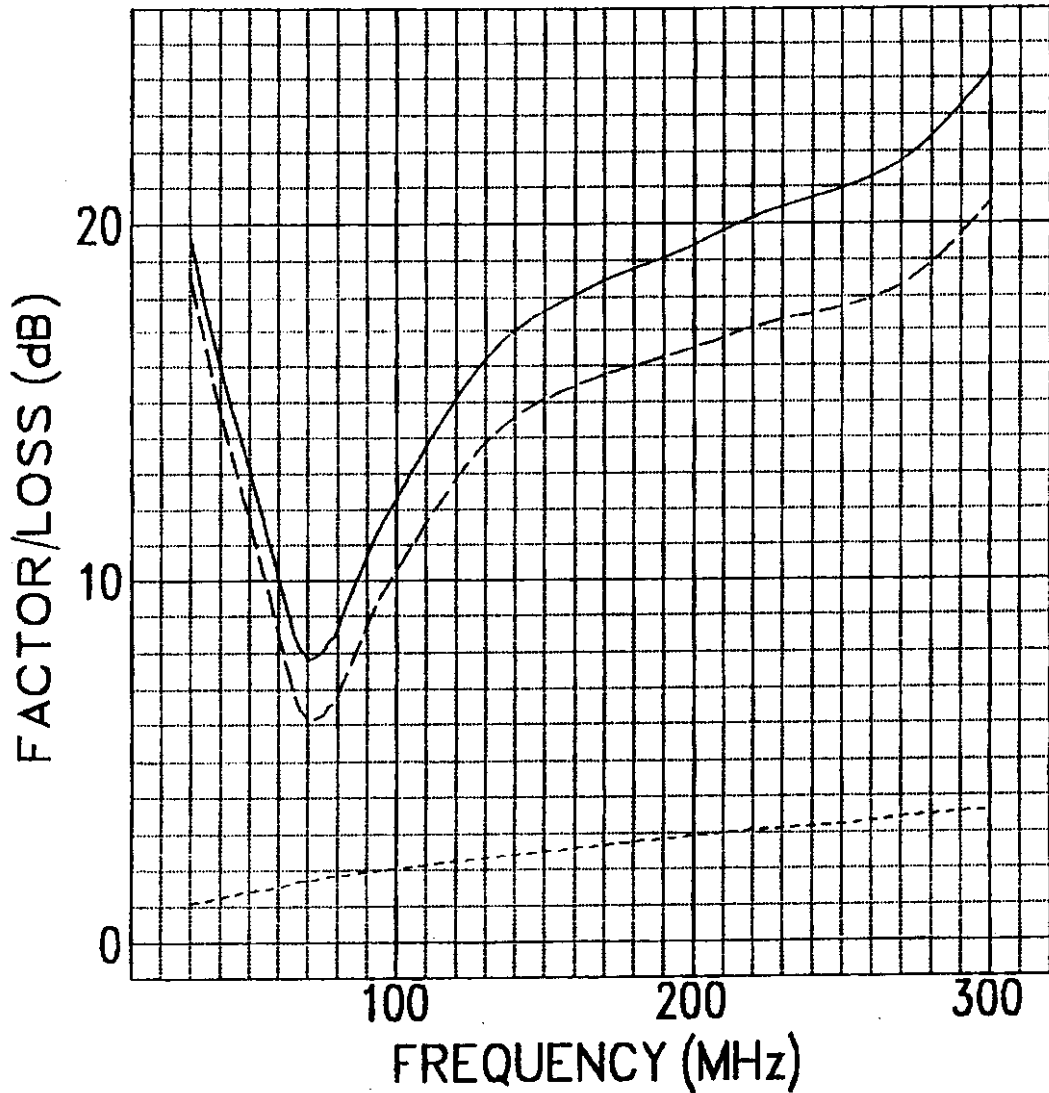


EXHIBIT # : 3-1
 FCC ID : ACJ927124K
 OUR REF. : MKES99-F019
 MODEL NO. : PV-DV1999D
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CORRECTION FACTOR OF BBA9106

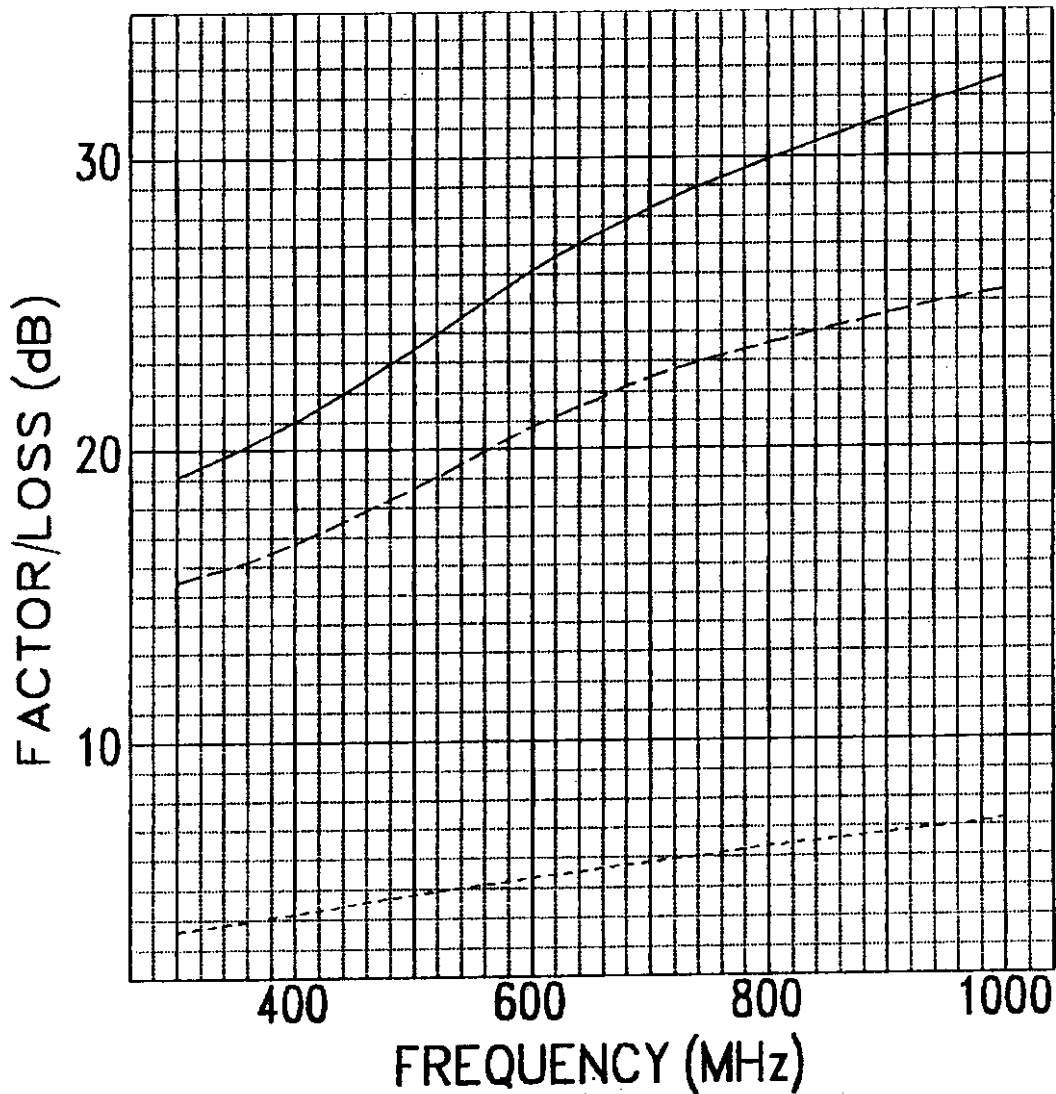


E = V + K	———— : Correction Factor
E : Field Strength	----- : Antenna Factor
V : Correction Factor (dB) : Cable Loss

EXHIBIT # : 3-1
 FCC ID : ACJ927124K
 OUR REF. : MKES99-F019
 MODEL NO. : PV-DV1999D

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CORRECTION FACTOR OF UHALP9107



$E = V + K$

E : Field Strength

V : Correction Factor (dB)

———— : Correction Factor

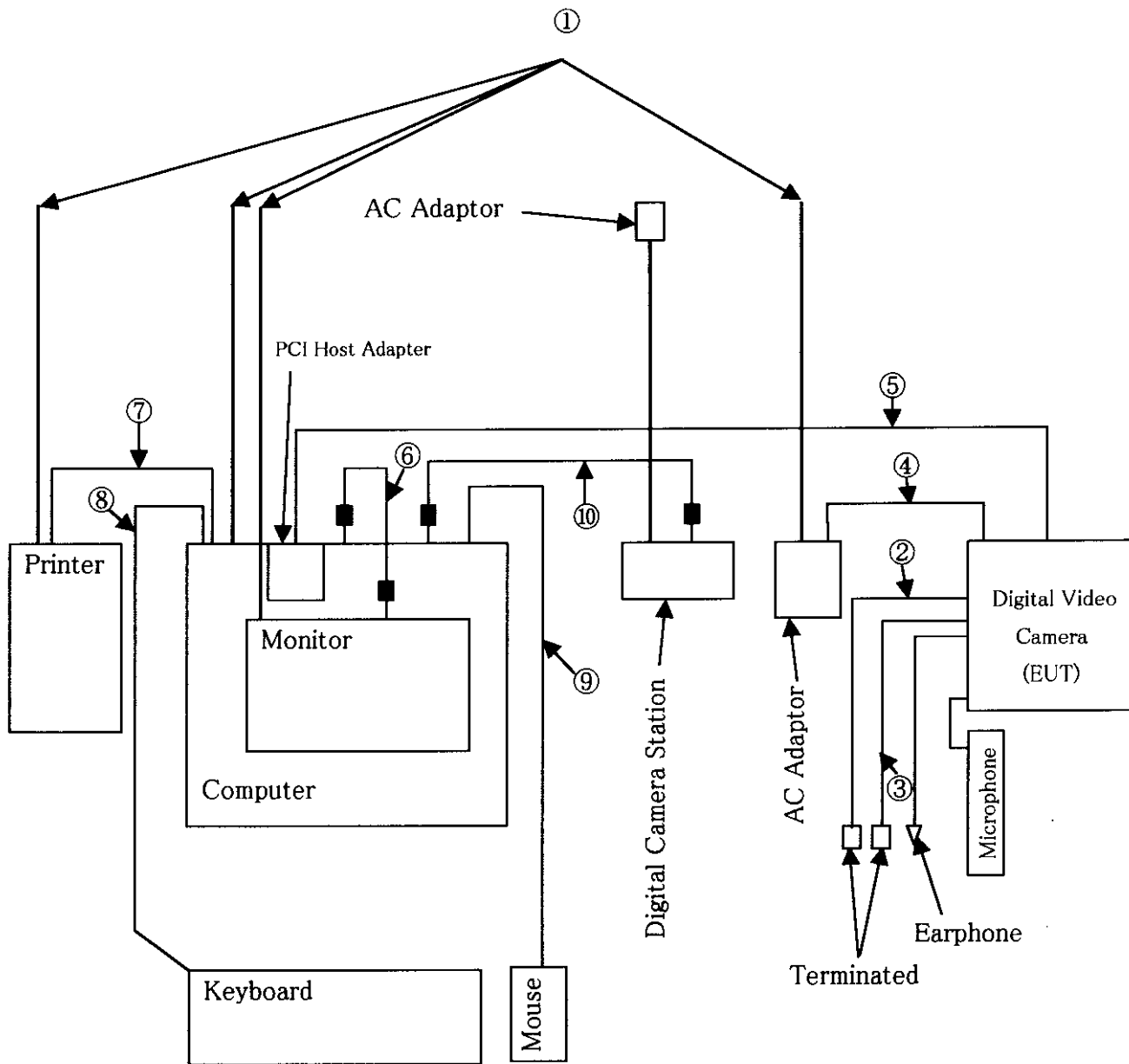
----- : Antenna Factor

- · - · - · : Cable Loss

Block Diagram of System for Measurements

EXHIBIT # : 3-2
FCC ID : ACJ927124K
OUR REF. : MKES99-F019
MODEL NO. : PV-DV1999D

DV Mode



DV Mode

Type of Interface Cable

1. Power Cord
2. Audio/Video Cable (1.5 m) : Shielded Cable; Circular Cable
3. S-Video Cable (1.5 m) : Shielded Cable; Circular Cable
4. DC Cable (2.0 m) : Circular Cable
5. PC Interface cable (2.0 m) : Shielded Cable; Circular Cable
6. Monitor Cable (1.5 m) : Shielded Cable with Ferrite Cores ; Circular Cable
(Permanently attached to the Monitor)
7. Printer Cable (1.5 m) : Shielded Cable; Circular Cable
(Parallel Cable)
8. Keyboard Cable (1.7 m) : Shielded Cable ; Circular Cable
(Permanently attached to the Keyboard)
9. Mouse Cable (1.8 m) : Shielded Cable ; Circular Cable
(Permanently attached to the Mouse)
10. PC Connection cable (2.0 m) : Shielded Cable with Ferrite Cores ; Circular Cable
(Serial Cable)

EXHIBIT # : 3-2
FCC ID : ACJ927124K
OUR REF. : MKES99-F019
MODEL NO. : PV-DV1999D

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DV Mode

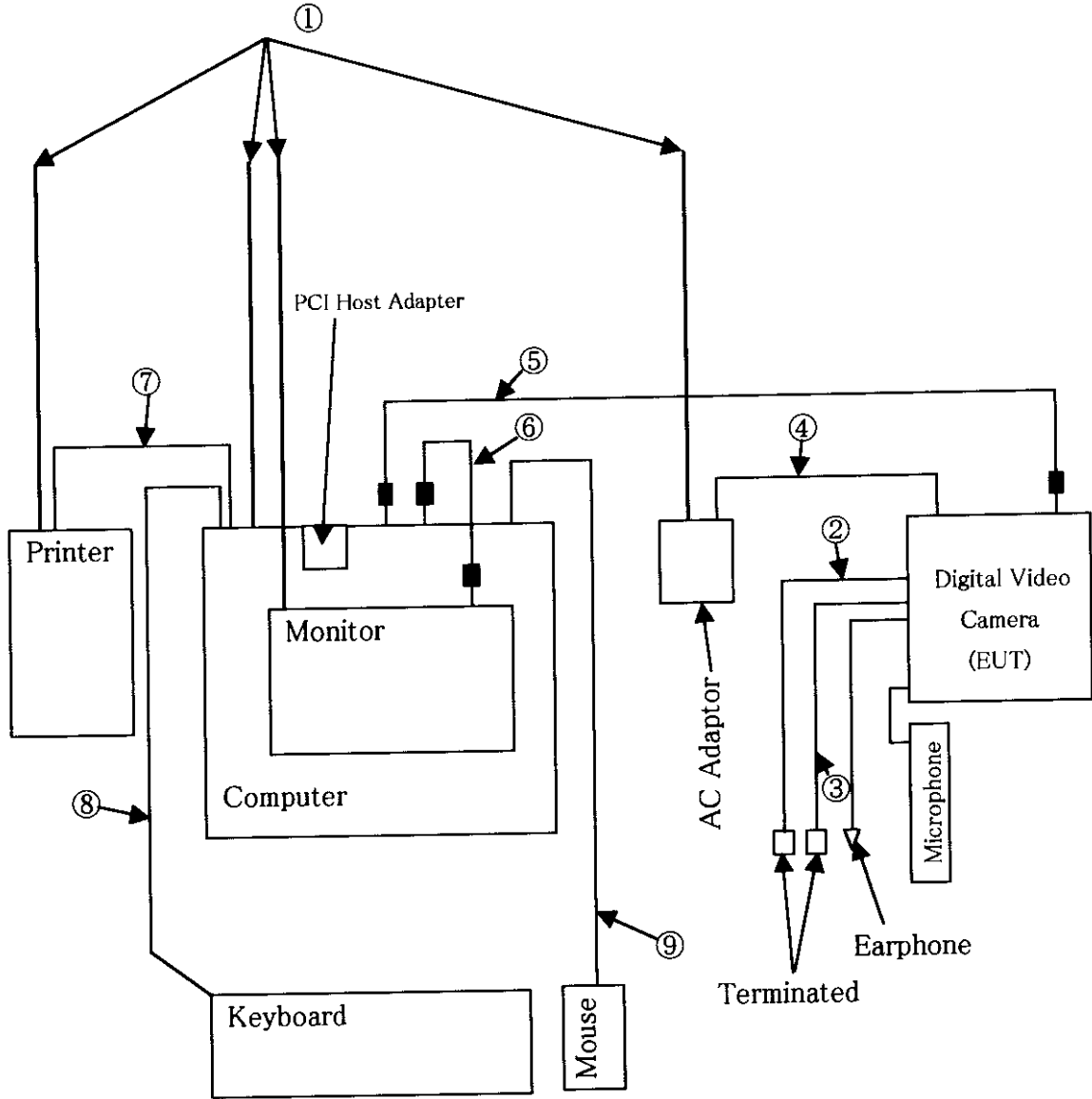
Description

Digital Video Camera (Application Device)	Model No. : PV-DV1999D Trade Name : Panasonic FCC ID : ACJ927124K
AC Adaptor (For Digital Video Camera)	Model No. : PV-DAC10 Trade Name : Panasonic
Microphone	Model No. : ECM-K57 Trade Name : SONY
Monitor (Certified Device)	Model No. : 500-069EV Trade Name : Gateway FCC ID : BEJCS592
Computer (DoC Device)	Model No. : DCM Trade Name : DELL Computer Corporation
1394-to-PCI Host Adapter (DoC Device)	Model No. : AHA-8940 Trade Name : Adaptec, Inc.
Keyboard (Certified Device)	Model No. : SK-1000REW Trade Name : DELL Computer Corporation FCC ID : GYUR36SK
Mouse (Certified Device)	Model No. : 90741 Trade Name : Microsoft Corporation FCC ID : C3KKMP3
Printer (Certified Device)	Model No. : P-200JD Trade Name : Panasonic FCC ID : IUO5LU0002
Digital Camera Station (Certified Device)	Model No. : LSSQ0141 Trade Name : Panasonic FCC ID : ACJ927117K
AC Adaptor (For Digital Camera Station)	Model No. : LSSQ0142 Trade Name : Panasonic

Block Diagram of System for Measurements

EXHIBIT # : 3-2
FCC ID : ACJ927124K
OUR REF. : MKES99-F019
MODEL NO. : PV-DV1999D

Serial Mode



Serial Mode

Type of Interface Cable

1. Power Cord
2. Audio/Video Cable (1.5 m) : Shielded Cable ; Circular Cable
3. S-Video Cable (1.5 m) : Shielded Cable ; Circular Cable
4. DC Cable (2.0 m) : Circular Cable
5. PC Interface cable (2.0 m) : Shielded Cable with Ferrite Cores ; Circular Cable
(Serial Cable)
6. Monitor Cable (1.5 m) : Shielded Cable with Ferrite Cores ; Circular Cable
(Permanently attached to the Monitor)
7. Printer Cable (1.5 m) : Shielded Cable ; Circular Cable
(Parallel Cable)
8. Keyboard Cable (1.7 m) : Shielded Cable ; Circular Cable
(Permanently attached to the Keyboard)
9. Mouse Cable (1.8 m) : Shielded Cable ; Circular Cable
(Permanently attached to the Mouse)

EXHIBIT # : 3-2
FCC ID : ACJ927124K
OUR REF. : MKES99-F019
MODEL NO. : PV-DV1999D

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Serial Mode

Description

Digital Video Camera (Application Device)	Model No. : PV-DV1999D Trade Name : Panasonic FCC ID : ACJ927124K
AC Adaptor (For Digital Video Camera)	Model No. : PV-DAC10 Trade Name : Panasonic
Microphone	Model No. : ECM-K57 Trade Name : SONY
Monitor (Certified Device)	Model No. : 500-069EV Trade Name : Gateway FCC ID : BEJCS592
Computer (DoC Device)	Model No. : DCM Trade Name : DELL Computer Corporation
1394-to-PCI Host Adapter (DoC Device)	Model No. : AHA-8940 Trade Name : Adaptec, Inc.
Keyboard (Certified Device)	Model No. : SK-1000REW Trade Name : DELL Computer Corporation FCC ID : GYUR36SK
Mouse (Certified Device)	Model No. : 90741 Trade Name : Microsoft Corporation FCC ID : C3KKMP3
Printer (Certified Device)	Model No. : P-200JD Trade Name : Panasonic FCC ID : IUO5LU0002

Description of Digital Device

EXHIBIT # : 4-1
FCC ID : ACJ927124K
OUR REF. : MKES99-F019
MODEL NO. : PV-DV1999D
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Technical Specification

Power Source : DC 7.2 / 7.8 V
Power Consumption : 7 W
Video Recording System : EIA Standard (525 lines, 60 fields)
NTSC color signal
Frequency generated or used : 10 kHz - 49.152 MHz
Operating Temperature : 0°C - 40°C
Operating Humidity : 10 % - 75 %

Performance Explanation of Digital Video Camera

1) Camera Mode(Camera->DV Output/Monitor Output/Tape Recording/DSC Recording)

The light on the CCD through the lens is converted to the electric analog signal and it is forwarded to the Camera Process. In the Camera Process, the analog signal is converted to the digital signal by the built-in A/D Converter and is processed as image. Then, it is converted to the digital component signal.

The digital component signal is forwarded to Format Process via the Video I/O Interface of the VCR Block, and is compressed and converted to the DV Format signal. The DV format signal is processed by the Tape Format and it is converted to Tape Recording signal for recording on the tape. On the other hand, it is processed by the DIF Process to output the DV Signal conformed with the IEEE1394 to the PCs or the different DVCs through the DV Cable.

And, the D/A converted NTSC Video signal by Video I/O Interface is forwarded to the VIDEO AMP and the amplified VIDEO signal is output to TV monitors, etc. through Audio/Video I/O Terminals.

2) Playback Mode(Tape Signal->DV Output/Monitor Output)

The signal by way of Cylinder Head from the tape is converted to the DV Format signal by the Format Process. The DV Format signal is processed by the DIF Process to output the DV Signal conformed with the IEEE1394 to the PCs or the different DVCs. This compressed DV signal is extracted. Then the D/A converted NTSC Video signal by Video I/O Interface is forwarded to the VIDEO AMP and the amplified VIDEO signal is output to TV monitors, etc. through Audio/Video I/O Terminals.

3) DV Input Mode(DV Input Signal->Monitor Output/Tape Recording)

The DV signal conformed with the IEEE1394 via the DV Cable from the PCs or the different DVCs is converted to the DV Format signal by DIF Process. The DV format signal is processed by the Tape Format and it is converted to Tape Recording signal for recording on the tape. This compressed DV signal is extracted. Then the D/A converted NTSC Video signal by Video I/O Interface is forwarded to the VIDEO AMP and the amplified VIDEO signal is output to TV monitors, etc. through Audio/Video I/O Terminals.

4) ANALOG Mode(Analog Input Signal->DV Output/Tape Recording)

The Video signal which was input on the Audi/Video I/O terminals is forwarded to the Analog Interface through the IN/OUT Control Selector. The Video signal is forwarded to the Video I/O Interface for the A/D conversion, then it is forwarded from the Video I/O Interface to the Format Process. And it is compressed and converted to the DV Format signal. The DV format signal is processed by the Tape Format and it is converted to Tape Recording signal for recording on the tape. On the other hand, it is processed by the DIF Process to output the DV Signal conformed with the IEEE1394 to the PCs or the different DVCs through the DV Cable.

5) DSC Still Image Output Mode(DSC Memory->RS232C/Monitor Output)

The image stored on the memory of DSC is amplified by the RS-232C Driver and is output to the PCs, etc. through the RS-232C Cable.

6) Playback Still Image Output Mode(Tape Signal->Memory->RS-232C/Monitor)

The still image stored on the memory of playback tape signal is amplified by the RS-232C Driver and is output to the PCs, etc. through the RS-232C Cable.

EXHIBIT # : 4-2
 FCC ID : ACJ927124K
 OUR REF. : MKES99-F019
 MODEL NO. : PV-DV1999D

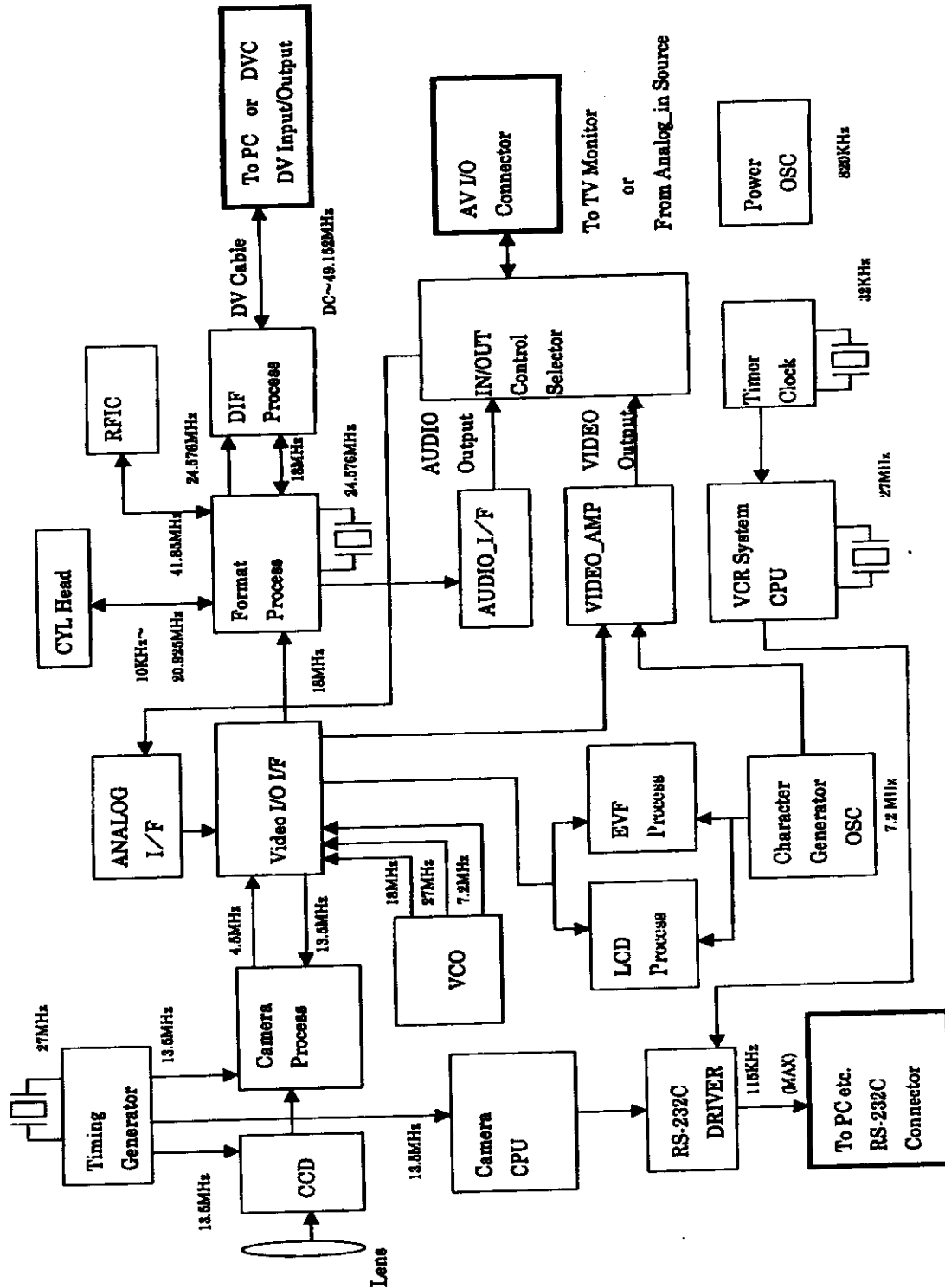


EXHIBIT # : 4-2
 FCC ID : ACJ927124K
 OUR REF. : MKES99-F019
 MODEL NO. : PV-DV1999D

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List of Frequency

CLOCK of Digital Video Camera

CIRCUIT Name	CLOCK
Timing Generator	27.0 MHz
CCD	13.5 MHz
Camera Process	13.5 MHz
Camera I/F	4.5 MHz
	13.5 MHz
Format Process	18.0 MHz
	24.576 MHz
	41.85 MHz
CYL Head	10 kHz ~ 20.925 MHz
DIF Process	18.0 MHz
	DC ~ 49.152 MHz
Power	700 kHz
Timer Clock	32.0 kHz
Character Generator OSC	7.2 MHz
VCR System CPU	27.0 MHz
LCD Process (PLL)	19.07 MHz
EVF Process (PLL)	10.38 MHz