

Matsushita-Kotobuki Electronics Industries Ltd.

Saijo Division

Address: 247 Fukutake, Saijo, Ehime 793 - 8510 Japan
Tel: 0897 - 56 - 1111 / Fax: 0897 - 53 - 1392

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

Date: Feb. 28, 2000

EXHIBIT # : 3
FCC ID : ACJ927139AH
OUR REF. : MKES00-F012
MODEL NO. : VHQ-451
Sheet 1 of 26 Sheets

Name of Manufacturer: Matsushita-Kotobuki Electronics Industries Ltd.

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

Device Under Measurement

FCC ID : ACJ927139AH
Model No. : VHQ-451
Trade Name : Quatsar
Applicant : Matsushita Electric Ind. Co., Ltd.
This device is a representative model of KG-21HG 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.

Saijo Division

Address: 247 Fukutake, Saijo, Ehime 793-8510 Japan
Tel: 0897-56-1111 / Fax: 0897-53-1392

Tuner: ENG56717G1

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

EXHIBIT # : 3
FCC ID : ACJ927139AH
OUR REF. : MKES00-F012
MODEL NO. : VHQ-451
Sheet 2 of 26 Sheets

1) 15.107 Power Line Conducted Voltage

Freq. (MHz)	Limits (dBuV)	Interference (dBuV)	
		1- end & Grounded	The other- end & Gro.
0.45	48	25.1	25.0
0.52	48	32.3	34.0
0.66	48	25.6	24.8
0.78	48	24.3	25.6
23.11	48	23.8	25.4
28.64	48	40.8	41.9

(Refer to Sheet 4.11.14 of 26 Sheets)

2) 15.109 Radiated Emission(Including Tuner)

Freq. (MHz)	Limits (dBuV/m)	Emission (dBuV/m)	
		Horiz.	Vert.
85.90	40.0	31.4	28.0
114.55	40.0	37.5	33.5
121.71	43.5	32.4	30.0
833.00	43.5	36.2	34.2
839.00	46.0	36.8	34.5
845.00	54.0	36.7	33.7

(Refer to Sheet 4.5.12.13.23.24.25.26 of 26 Sheets)

Note: Without Laurel Antenna
With accessories

3) 15.111 Antenna Power Conducted Voltage

Freq. (MHz)	Limits (dBuV)	Conducted Voltage (dBuV)
1618.0	51.8	43.0
1630.0	51.8	42.7
1642.0	51.8	43.0
1654.0	51.8	43.4
1666.0	51.8	43.0
1678.0	51.8	42.5

(Refer to Sheet 6 of 26 Sheets)

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

Ch	Limits (dBuV)		Level (dBuV)	
	Visual	Aural	Visual	Aural
3	69.5	56.5	64.5	50.9
4	69.5	56.5	63.7	49.7

(Refer to Sheet 7 of 26 Sheets)

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

Ch	Freq. (MHz)	Limits (dBuV)	Interference (dBuV)
3	43.38	39.5	24.4
	50.50	39.5	29.9
	71.93	39.5	27.9
	122.50	39.5	28.1
	183.75	39.5	31.9
4	384.60	39.5	22.4
	49.25	39.5	24.6
	56.50	39.5	29.4
	78.07	39.5	26.8
	134.50	39.5	28.6
	197.25	39.5	23.3
	201.75	39.5	28.7

(Refer to Sheet 8.9 of 26 Sheets)

6) 15.115© Transfer SW Isolation

Ch	Limits (dBuV)	Level (dBuV)
3	9.5	<3.9
4	9.5	<3.9

(Refer to Sheet 10 of 26 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

T. Watanabe
Engineer

Matsushita-Kotobuki Electronics Industries Ltd.

Saijo Division

Address: 247 Fukutake, Saijo, Ehime 793-8510 Japan
Tel: 0897-56-1111 / Fax: 0897-53-1392

Tuner: TMDH2-A24A

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

EXHIBIT # : 3
FCC ID : ACJ927139AH
OUR REF. : MKES00-F012
MODEL NO. : VHQ-451
Sheet 3 of 26 Sheets

1) 15.107 Power Line Conducted Voltage

Freq. (MHz)	Limits (dBuV)	Interference (dBuV)	
		1- end & Grounded	The other- end & Gro.
0.45	48	25.1	24.3
0.62	48	32.5	33.8
0.85	48	25.7	24.9
1.09	48	24.1	26.0
4.15	48	24.2	25.0
28.64	48	40.5	41.8

(Refer to Sheet 4.11.14 of 26 Sheets)

2) 15.109 Radiated Emission(Including Tuner)

Freq. (MHz)	Limits (dBuV/m)	Emission (dBuV/m)	
		Horiz.	Vert.
85.90	40.0	31.2	29.9
114.55	40.0	37.3	29.7
121.71	43.5	31.6	28.6
683.00	43.5	37.8	35.7
689.00	46.0	37.7	35.4
695.00	54.0	37.5	35.2

(Refer to Sheet 4.5.12,13,23,24,25,26 of 26 Sheets)

Note: Without Laurel Antenna
With accessories

3) 15.111 Antenna Power Conducted Voltage

Freq. (MHz)	Limits (dBuV)	Conducted Voltage (dBuV)
1450.0	51.8	42.6
1462.0	51.8	43.0
1474.0	51.8	43.2
1486.0	51.8	43.8
1498.0	51.8	43.0
1510.0	51.8	42.0

(Refer to Sheet 6 of 26 Sheets)

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

Ch	Limits (dBuV)		Level (dBuV)	
	Visual	Aural	Visual	Aural
3	69.5	56.5	64.8	49.7
4	69.5	56.5	67.2	49.1

(Refer to Sheet 7 of 26 Sheets)

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

Ch	Freq. (MHz)	Limits (dBuV)	Interference (dBuV)
3	50.50	39.5	25.8
	51.02	39.5	18.5
	55.31	39.5	18.0
	72.00	39.5	27.3
	122.50	39.5	17.2
4	183.75	39.5	19.6
	56.54	39.5	27.2
	61.33	39.5	17.8
	74.67	39.5	16.4
	77.92	39.5	27.0
	134.50	39.5	18.2
	201.75	39.5	15.4

(Refer to Sheet 8.9 of 26 Sheets)

6) 15.115© Transfer SW Isolation

Ch	Limits (dBuV)	Level (dBuV)
3	9.5	<3.9
4	9.5	<3.9

(Refer to Sheet 10 of 26 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

T. Watanabe
Engineer

Part 15 Subpart B, (TV Interface Device)

1) 15.107 Power Line Conducted Voltage

Video Signal	Freq. (MHz)	Meter Read. (dBuV)		LISN Factor (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	24.7	25.2	0.1	24.8	25.3
	0.52	31.5	32.5	0.1	31.6	32.6
	0.66	25.2	25.6	0.1	25.3	25.7
	0.78	24.7	25.3	0.1	24.8	25.4
	23.11	23.3	24.0	0.9	24.2	24.9
	28.64	39.0	39.9	1.0	40.0	40.9
Multi Burst 5 V p-p	0.45	24.9	25.5	0.1	25.0	25.6
	0.52	33.5	34.2	0.1	33.6	34.3
	0.66	25.7	25.8	0.1	25.8	25.9
	0.78	24.5	24.6	0.1	24.6	24.7
	23.11	23.5	24.0	0.9	24.4	24.9
	28.64	38.2	39.2	1.0	39.2	40.2
Internal Signal	0.45	25.0	24.9	0.1	25.1	25.0
	0.52	32.2	33.9	0.1	32.3	34.0
	0.66	25.5	24.7	0.1	25.6	24.8
	0.78	24.2	25.5	0.1	24.3	25.6
	23.11	22.9	24.5	0.9	23.8	25.4
	28.64	39.8	40.9	1.0	40.8	41.9
RF/CATV Signal Input	0.45	26.2	27.2	0.1	26.3	27.3
	0.52	32.5	32.8	0.1	32.6	32.9
	0.66	25.1	25.8	0.1	25.2	25.9
	0.78	24.5	24.7	0.1	24.6	24.8
	23.11	23.0	23.0	0.9	23.9	23.9
	28.64	39.2	39.8	1.0	40.2	40.8

Note:

1. Sample calculation at

M.B., 1 V p-p, 1-end & Gro. 0.45 MHz ; $24.7 + 0.1 = 24.8$ (dBuV)

2. Measuring Instruments:

a) Field strength meter

- Kyoritsu Electric Work Co., Ltd.

Model : KNM-2403

(1) Detector function : CISPR Q-Peak

(2) IF band width : 9 kHz

(3) Input impedance : 50 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

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.

Part 15 Subpart B. (TV Interface Device)

Sheet 5 of 26 Sheets

2) 15.109 Radiated Emission (Tuner: ENG56717G1 / 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	85.90	15.3	11.1	9.6	24.9	20.7
	114.55	17.4	12.0	14.4	31.8	26.4
	121.71	11.6	9.7	15.2	26.8	24.9
	833.00	4.7	3.2	27.7	32.4	30.9
	839.00	5.9	3.4	27.8	33.7	31.2
	845.00	5.6	2.6	28.0	33.6	30.6
Multi Burst 5 V p-p	85.90	17.0	13.0	9.6	26.6	22.6
	114.55	17.5	14.4	14.4	31.9	28.8
	121.71	12.6	7.1	15.2	27.8	22.3
	833.00	4.7	3.2	27.7	32.4	30.9
	839.00	5.9	3.4	27.8	33.7	31.2
	845.00	5.6	2.6	28.0	33.6	30.6
Internal Signal	85.90	17.0	13.6	9.6	26.6	23.2
	114.55	18.7	16.9	14.4	33.1	31.3
	121.71	11.3	10.5	15.2	26.5	25.7
	833.00	4.7	3.2	27.7	32.4	30.9
	839.00	5.9	3.4	27.8	33.7	31.2
	845.00	5.6	2.6	28.0	33.6	30.6
RF/CATV Signal Input	85.90	14.7	12.9	9.6	24.3	22.5
	114.55	17.4	8.4	14.4	31.8	22.8
	121.71	13.2	9.3	15.2	28.4	24.5
	833.00	4.7	3.2	27.7	32.4	30.9
	839.00	5.9	3.4	27.8	33.7	31.2
	845.00	5.6	2.6	28.0	33.6	30.6

Note: 1. Sample calculation at

M.B., 1 V p-p, Horiz. 85.90 MHz ; 15.3 + 9.6 = 24.9 (dBuV/m)

2. Measuring Instruments:

a) Field strength meter

- Hewlett Packard company

Model: HP 8546A

(1) Frequency range : 9 kHz to 6.5 GHz

(2) RF Input : 50 ohm

(3) IF band width : 200 Hz/ 9 kHz/ 120 kHz/ 1MHz

(4) Detector function : Average/CISPR Q-Peak/Peak

b) Test Signal Generator
(Multi Burst)

- Shibasoku Co., Ltd.

Model: TG-5, 2U2

c) Receiving antenna

- Schwarzbeck

Model: VHA9103 30 - 300 MHz

Model: UHALP9108A 300 - 1000 MHz

- The Electro-Mechanics Company

Model: 3115 1 - 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.

Part 15 Subpart B. (TV Interface Device)

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	85.90	20.6	17.6	9.6	30.2	27.2
	114.55	22.8	17.0	14.4	37.2	31.4
	121.71	16.9	13.4	15.2	32.1	28.6
	833.00	8.5	6.5	27.7	36.2	34.2
	839.00	9.0	6.7	27.8	36.8	34.5
	845.00	8.7	5.7	28.0	36.7	33.7
Multi Burst 5 V p-p	85.90	21.8	18.4	9.6	31.4	28.0
	114.55	22.9	19.0	14.4	37.3	33.4
	121.71	17.3	14.8	15.2	32.5	30.0
	833.00	8.5	6.5	27.7	36.2	34.2
	839.00	9.0	6.7	27.8	36.8	34.5
	845.00	8.7	5.7	28.0	36.7	33.7
Internal Signal	85.90	21.8	18.4	9.6	31.4	28.0
	114.55	23.1	19.1	14.4	37.5	33.5
	121.71	17.2	14.8	15.2	32.4	30.0
	833.00	8.5	6.5	27.7	36.2	34.2
	839.00	9.0	6.7	27.8	36.8	34.5
	845.00	8.7	5.7	28.0	36.7	33.7
RF/CATV Signal Input	85.90	20.1	17.7	9.6	29.7	27.3
	114.55	22.6	16.6	14.4	37.0	31.0
	121.71	17.6	12.3	15.2	32.8	27.5
	833.00	8.5	6.5	27.7	36.2	34.2
	839.00	9.0	6.7	27.8	36.8	34.5
	845.00	8.7	5.7	28.0	36.7	33.7

Note: 1. Sample calculation at

M.B., 1 V p-p, Horiz. 85.90 MHz ; 20.6 + 9.6 = 30.2 (dBuV/m)

2. Measuring Instruments:

a) Field strength meter

- Hewlett Packard company

Model: HP 8546A

(1) Frequency range : 9 kHz to 6.5 GHz

(2) RF Input : 50 ohm

(3) IF band width : 200 Hz/ 9 kHz/ 120 kHz/ 1MHz

(4) Detector function : Average/CISPR Q-Peak/Peak

b) Test Signal Generator
(Multi Burst)

- Shibasoku Co., Ltd.

Model: TG-5, 2U2

c) Receiving antenna

- Schwarzbeck

Model: VHA9103 30 - 300 MHz

Model: UHALP9108A 300 - 1000 MHz

- The Electro-Mechanics Company

Model: 3115 1 - 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.

Part 15 Subpart B, (TV Interface Device)

3) 15.111 (a) Antenna Power Conducted Voltage

Frequency (MHz)	Meter Reading (dBUV)	Matc. Pad Loss (dB)	Interference (dBUV)
1618.0	34.2	8.8	43.0
1630.0	33.9	8.8	42.7
1642.0	34.2	8.8	43.0
1654.0	34.6	8.8	43.4
1666.0	34.2	8.8	43.0
1678.0	33.7	8.8	42.5

Antenna Input Impedance: 75 ohms (Unbalanced)

Note:

1. Sample calculation at 1618.0 MHz ; 34.2 + 8.8 = 43.0 (dBUV)

2. Measuring Instrument:

a) Spectrum Analyzer

- ADVANTEST Co., Ltd.

Model : R3261A

(1) Detector function : Peak

(2) Band width : 100 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 (Tuner: ENG56717G1)

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	62.2	48.6	2.3	64.5	50.9
	4	67.25	71.75	61.4	47.4	2.3	63.7	49.7
Multi Burst 5 V p-p	3	61.25	65.75	62.2	48.6	2.3	64.5	50.9
	4	67.25	71.75	61.4	47.4	2.3	63.7	49.7
Internal Signal	3	61.25	65.75	62.2	48.6	2.3	64.5	50.9
	4	67.25	71.75	61.4	47.4	2.3	63.7	49.7
RF/CATV Signal	3	61.25	65.75	62.2	48.6	2.3	64.5	50.9
	4	67.25	71.75	61.4	47.4	2.3	63.7	49.7

RF Output Impedance: 75 ohms (Unbalanced)

Note:

1. Sample calculation at

M.B., 1 V p-p, Visual, 3 Ch ; $62.2 + 2.3 = 64.5$ (dBuV)

2. Measuring Instrument:

a) Spectrum Analyzer

- Anritsu Electric Co., Ltd.

Model : MS62B

(1) Detector function : Peak

(2) Band width : 100 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	Ch	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	43.38	46.4	2.3	N/A	24.3	24.4
		50.50	51.9	2.3	N/A	24.3	29.9
		71.93	50.0	2.3	N/A	24.4	27.9
		122.50	50.1	2.3	N/A	24.3	28.1
		183.75	53.9	2.3	N/A	24.3	31.9
		384.60	43.8	2.7	N/A	24.1	22.4
		49.25	46.6	2.3	N/A	24.3	24.6
	4	56.50	51.4	2.3	N/A	24.3	29.4
		78.07	48.9	2.3	N/A	24.4	26.8
		134.50	50.6	2.3	N/A	24.3	28.6
		197.25	45.3	2.3	N/A	24.3	23.3
		201.75	50.7	2.3	N/A	24.3	28.7
Multi Burst 5 V p-p	3	43.38	46.4	2.3	N/A	24.3	24.4
		50.50	51.9	2.3	N/A	24.3	29.9
		71.93	50.0	2.3	N/A	24.4	27.9
		122.50	50.1	2.3	N/A	24.3	28.1
		183.75	53.9	2.3	N/A	24.3	31.9
		384.60	43.8	2.7	N/A	24.1	22.4
		49.25	46.6	2.3	N/A	24.3	24.6
	4	56.50	51.4	2.3	N/A	24.3	29.4
		78.07	48.9	2.3	N/A	24.4	26.8
		134.50	50.6	2.3	N/A	24.3	28.6
		197.25	45.3	2.3	N/A	24.3	23.3
		201.75	50.7	2.3	N/A	24.3	28.7
Internal Signal	3	43.38	46.4	2.3	N/A	24.3	24.4
		50.50	51.9	2.3	N/A	24.3	29.9
		71.93	50.0	2.3	N/A	24.4	27.9
		122.50	50.1	2.3	N/A	24.3	28.1
		183.75	53.9	2.3	N/A	24.3	31.9
		384.60	43.8	2.7	N/A	24.1	22.4
		49.25	46.6	2.3	N/A	24.3	24.6
	4	56.50	51.4	2.3	N/A	24.3	29.4
		78.07	48.9	2.3	N/A	24.4	26.8
		134.50	50.6	2.3	N/A	24.3	28.6
		197.25	45.3	2.3	N/A	24.3	23.3
		201.75	50.7	2.3	N/A	24.3	28.7
RF/CATV Signal Input	3	43.38	46.4	2.3	N/A	24.3	24.4
		50.50	51.9	2.3	N/A	24.3	29.9
		71.93	50.0	2.3	N/A	24.4	27.9
		122.50	50.1	2.3	N/A	24.3	28.1
		183.75	53.9	2.3	N/A	24.3	31.9
		384.60	43.8	2.7	N/A	24.1	22.4
		49.25	46.6	2.3	N/A	24.3	24.6
	4	56.50	51.4	2.3	N/A	24.3	29.4
		78.07	48.9	2.3	N/A	24.4	26.8
		134.50	50.6	2.3	N/A	24.3	28.6
		197.25	45.3	2.3	N/A	24.3	23.3
		201.75	50.7	2.3	N/A	24.3	28.7

Tuner: ENG56717G1

EXHIBIT # : 3
FCC ID : ACJ927139AH
OUR REF. : MKES00-F012
MODEL NO. : VHQ-451
Sheet 10 of 26 Sheets

Part 15 Subpart B, (TV Interface Device)

RF Output Impedance: 75 ohms (Unbalanced)

Note:

1. Sample calculation at

M.B., 1 V p-p, 3 Ch., 43.38 MHz ; $46.4 + 2.3 - 24.3 = 24.3$ (dBuV)

2. Measuring Instrument:

a) Spectrum Analyzer

- Anritsu Electric Co., Ltd.

Model : MS62B

(1) Detector function : Peak

(2) Band width : 100 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	<26.0	2.3	24.4	N/A	<3.9
	4	<26.0	2.3	24.4	N/A	<3.9
Multi Burst 5 V p-p	3	<26.0	2.3	24.4	N/A	<3.9
	4	<26.0	2.3	24.4	N/A	<3.9
Internal Signal	3	<26.0	2.3	24.4	N/A	<3.9
	4	<26.0	2.3	24.4	N/A	<3.9

RF Output Impedance: 75 ohms (Unbalanced)

Note:

1. Sample calculation at

M.B., 1 V p-p, Visual, 3 Ch ; $<26.0 + 2.3 - 24.4 = <3.9$ (dBuV)

2. Measuring Instrument:

a) Spectrum Analyzer

- Anritsu Electric Co., Ltd.

Model : MS62B

(1) Detector function : Peak

(2) Band width : 100 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

Part 15 Subpart B, (TV Interface Device)

2) 15.107 Power Line Conducted Voltage

Video Signal	Freq. (MHz)	Meter Read. (dBUV)		LISN Factor (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	24.8	25.3	0.1	24.9	25.4
	0.62	31.0	32.3	0.1	31.1	32.4
	0.85	24.9	25.8	0.1	25.0	25.9
	1.09	24.8	23.6	0.1	24.9	23.7
	4.15	23.1	25.3	0.9	24.0	26.2
	28.64	38.1	39.2	1.0	39.1	40.2
Multi Burst 5 V p-p	0.45	25.0	25.6	0.1	25.1	25.7
	0.62	33.7	34.7	0.1	33.8	34.8
	0.85	25.8	25.4	0.1	25.9	25.5
	1.09	24.8	26.1	0.1	24.9	26.2
	4.15	23.9	24.0	0.9	24.8	24.9
	28.64	38.5	37.9	1.0	39.5	38.9
Internal Signal	0.45	25.0	24.2	0.1	25.1	24.3
	0.62	32.4	33.7	0.1	32.5	33.8
	0.85	25.6	24.8	0.1	25.7	24.9
	1.09	24.0	25.9	0.1	24.1	26.0
	4.15	23.3	24.1	0.9	24.2	25.0
	28.64	39.5	40.8	1.0	40.5	41.8
RF/CATV Signal Input	0.45	26.0	27.7	0.1	26.1	27.8
	0.62	32.6	32.7	0.1	32.7	32.8
	0.85	25.2	25.9	0.1	25.3	26.0
	1.09	24.3	24.5	0.1	24.4	24.6
	4.15	22.4	24.2	0.9	23.3	25.1
	28.64	40.1	39.1	1.0	41.1	40.1

Note:

1. Sample calculation at

M.B., 1 V p-p, 1-end & Gro. 0.45 MHz ; $24.8 + 0.1 = 24.9$ (dBUV)

2. Measuring Instruments:

a) Field strength meter

- Kyoritsu Electric Work Co., Ltd.

Model : KNM-2403

(1) Detector function : CISPR Q-Peak

(2) IF band width : 9 kHz

(3) Input impedance : 50 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

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.

Part 15 Subpart B. (TV Interface Device)

Sheet 13 of 26 Sheets

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	85.90	15.7	11.2	9.6	25.3	20.8
	114.55	18.7	12.9	14.4	33.1	27.3
	121.71	12.1	8.1	15.2	27.3	23.3
	683.00	8.9	6.5	25.7	34.6	32.2
	689.00	8.8	6.0	25.8	34.6	31.8
	695.00	8.3	5.8	25.9	34.2	31.7
Multi Burst 5 V p-p	85.90	15.1	12.5	9.6	24.7	22.1
	114.55	17.2	12.8	14.4	31.6	27.2
	121.71	11.8	9.5	15.2	27.0	24.7
	683.00	8.9	6.5	25.7	34.6	32.2
	689.00	8.8	6.0	25.8	34.6	31.8
	695.00	8.3	5.8	25.9	34.2	31.7
Internal Signal	85.90	16.2	15.7	9.6	25.8	25.3
	114.55	18.2	7.6	14.4	32.6	22.0
	121.71	11.6	7.9	15.2	26.8	23.1
	683.00	8.9	6.5	25.7	34.6	32.2
	689.00	8.8	6.0	25.8	34.6	31.8
	695.00	8.3	5.8	25.9	34.2	31.7
RF/CATV Signal Input	85.90	16.1	17.1	9.6	25.7	26.7
	114.55	16.7	11.4	14.4	31.1	25.8
	121.71	12.6	8.9	15.2	27.8	24.1
	683.00	8.9	6.5	25.7	34.6	32.2
	689.00	8.8	6.0	25.8	34.6	31.8
	695.00	8.3	5.8	25.9	34.2	31.7

Note: 1. Sample calculation at

M.B., 1 V p-p, Horiz. 85.90 MHz ; 15.7 + 9.6 = 25.3 (dBuV/m)

2. Measuring Instruments:

a) Field strength meter

- Hewlett Packard company

Model: HP 8546A

(1) Frequency range : 9 kHz to 6.5 GHz

(2) RF Input : 50 ohm

(3) IF band width : 200 Hz/ 9 kHz/ 120 kHz/ 1MHz

(4) Detector function : Average/CISPR Q-Peak/Peak

b) Test Signal Generator
(Multi Burst)

- Shibasoku Co., Ltd.

Model: TG-5, 2U2

c) Receiving antenna

- Schwarzbeck

Model: VHA9103 30 - 300 MHz

Model: UHALP9108A 300 - 1000 MHz

- The Electro-Mechanics Company

Model: 3115 1 - 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.

Part 15 Subpart B. (TV Interface Device)

Sheet 14 of 26 Sheets

2) 15.109 Radiated Emission (Tuner: 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	85.90	20.5	17.5	9.6	30.1	27.1
	114.55	22.8	17.2	14.4	37.2	31.6
	121.71	17.2	13.2	15.2	32.4	28.4
	683.00	12.1	10.0	25.7	37.8	35.7
	689.00	11.9	9.6	25.8	37.7	35.4
	695.00	11.6	9.3	25.9	37.5	35.2
Multi Burst 5 V p-p	85.90	20.5	17.5	9.6	30.1	27.1
	114.55	22.5	16.5	14.4	36.9	30.9
	121.71	16.8	13.8	15.2	32.0	29.0
	683.00	12.1	10.0	25.7	37.8	35.7
	689.00	11.9	9.6	25.8	37.7	35.4
	695.00	11.6	9.3	25.9	37.5	35.2
Internal Signal	85.90	21.6	20.3	9.6	31.2	29.9
	114.55	22.9	15.3	14.4	37.3	29.7
	121.71	16.4	13.4	15.2	31.6	28.6
	683.00	12.1	10.0	25.7	37.8	35.7
	689.00	11.9	9.6	25.8	37.7	35.4
	695.00	11.6	9.3	25.9	37.5	35.2
RF/CATV Signal Input	85.90	20.5	19.3	9.6	30.1	28.9
	114.55	22.6	15.7	14.4	37.0	30.1
	121.71	17.8	14.1	15.2	33.0	29.3
	683.00	12.1	10.0	25.7	37.8	35.7
	689.00	11.9	9.6	25.8	37.7	35.4
	695.00	11.6	9.3	25.9	37.5	35.2

Note: 1. Sample calculation at

M.B., 1 V p-p, Horiz. 85.90 MHz ; 20.5 + 9.6 = 30.1 (dBuV/m)

2. Measuring Instruments:

a) Field strength meter

- Hewlett Packard company

Model: HP 8546A

(1) Frequency range : 9 kHz to 6.5 GHz

(2) RF Input : 50 ohm

(3) IF band width : 200 Hz/ 9 kHz/ 120 kHz/ 1MHz

(4) Detector function : Average/CISPR Q-Peak/Peak

b) Test Signal Generator
(Multi Burst)

- Shibasoku Co., Ltd.

Model: TG-5, 2U2

c) Receiving antenna

- Schwarzbeck

Model: VHA9103 30 - 300 MHz

Model: UHALP9108A 300 - 1000 MHz

- The Electro-Mechanics Company

Model: 3115 1 - 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.

Part 15 Subpart B, (TV Interface Device)

3) 15.111 (a) Antenna Power Conducted Voltage

Frequency (MHz)	Meter Reading (dBUV)	Matc. Pad Loss (dB)	Interference (dBUV)
1450.0	33.8	8.8	42.6
1462.0	34.2	8.8	43.0
1474.0	34.4	8.8	43.2
1486.0	35.0	8.8	43.8
1498.0	34.2	8.8	43.0
1510.0	33.2	8.8	42.0

Antenna Input Impedance: 75 ohms (Unbalanced)

Note:

1. Sample calculation at 413.0 MHz ; 33.8 + 8.8 = 42.6 (dBUV)

2. Measuring Instrument:

a) Spectrum Analyzer

- ADVANTEST Co., Ltd.

Model : R3261A

(1) Detector function : Peak

(2) Band width : 100 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	62.5	47.4	2.3	64.8	49.7
	4	67.25	71.75	64.9	46.8	2.3	67.2	49.1
Multi Burst 5 V p-p	3	61.25	65.75	62.5	47.4	2.3	64.8	49.7
	4	67.25	71.75	64.9	46.8	2.3	67.2	49.1
Internal Signal	3	61.25	65.75	62.5	47.4	2.3	64.8	49.7
	4	67.25	71.75	64.9	46.8	2.3	67.2	49.1
RF/CATV Signal	3	61.25	65.75	62.5	47.4	2.3	64.8	49.7
	4	67.25	71.75	64.9	46.8	2.3	67.2	49.1

RF Output Impedance: 75 ohms (Unbalanced)

Note:

1. Sample calculation at

M.B., 1 V p-p, Visual, 3 Ch ; $62.5 + 2.3 = 64.8$ (dBuV)

2. Measuring Instrument:

a) Spectrum Analyzer

- Anritsu Electric Co., Ltd.

Model : MS62B

(1) Detector function : Peak

(2) Band width : 100 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)

Part 15 Subpart B, (TV Interface Device)

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

Video Signal	Ch	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	50.50	47.8	2.3	N/A	24.3	25.8
		51.02	40.5	2.3	N/A	24.3	18.5
		55.31	40.0	2.3	N/A	24.3	18.0
		72.00	49.4	2.3	N/A	24.4	27.3
		122.50	39.2	2.3	N/A	24.3	17.2
		183.75	41.6	2.3	N/A	24.3	19.6
	4	56.54	49.2	2.3	N/A	24.3	27.2
		61.33	39.8	2.3	N/A	24.3	17.8
		74.67	38.5	2.3	N/A	24.4	16.4
		77.92	49.1	2.3	N/A	24.4	27.0
		134.50	40.2	2.3	N/A	24.3	18.2
		201.75	37.4	2.3	N/A	24.3	15.4
Multi Burst 5 V p-p	3	50.50	47.8	2.3	N/A	24.3	25.8
		51.02	40.5	2.3	N/A	24.3	18.5
		55.31	40.0	2.3	N/A	24.3	18.0
		72.00	49.4	2.3	N/A	24.4	27.3
		122.50	39.2	2.3	N/A	24.3	17.2
		183.75	41.6	2.3	N/A	24.3	19.6
	4	56.54	49.2	2.3	N/A	24.3	27.2
		61.33	39.8	2.3	N/A	24.3	17.8
		74.67	38.5	2.3	N/A	24.4	16.4
		77.92	49.1	2.3	N/A	24.4	27.0
		134.50	40.2	2.3	N/A	24.3	18.2
		201.75	37.4	2.3	N/A	24.3	15.4
Internal Signal	3	50.50	47.8	2.3	N/A	24.3	25.8
		51.02	40.5	2.3	N/A	24.3	18.5
		55.31	40.0	2.3	N/A	24.3	18.0
		72.00	49.4	2.3	N/A	24.4	27.3
		122.50	39.2	2.3	N/A	24.3	17.2
		183.75	41.6	2.3	N/A	24.3	19.6
	4	56.54	49.2	2.3	N/A	24.3	27.2
		61.33	39.8	2.3	N/A	24.3	17.8
		74.67	38.5	2.3	N/A	24.4	16.4
		77.92	49.1	2.3	N/A	24.4	27.0
		134.50	40.2	2.3	N/A	24.3	18.2
		201.75	37.4	2.3	N/A	24.3	15.4
RF/CATV Signal Input	3	50.50	47.8	2.3	N/A	24.3	25.8
		51.02	40.5	2.3	N/A	24.3	18.5
		55.31	40.0	2.3	N/A	24.3	18.0
		72.00	49.4	2.3	N/A	24.4	27.3
		122.50	39.2	2.3	N/A	24.3	17.2
		183.75	41.6	2.3	N/A	24.3	19.6
	4	56.54	49.2	2.3	N/A	24.3	27.2
		61.33	39.8	2.3	N/A	24.3	17.8
		74.67	38.5	2.3	N/A	24.4	16.4
		77.92	49.1	2.3	N/A	24.4	27.0
		134.50	40.2	2.3	N/A	24.3	18.2
		201.75	37.4	2.3	N/A	24.3	15.4

Tuner: TMDH2-A24A

EXHIBIT # : 3
FCC ID : ACJ927139AH
OUR REF. : MKES00-F012
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Part 15 Subpart B, (TV Interface Device)

RF Output Impedance: 75 ohms (Unbalanced)

Note:

1. Sample calculation at

M.B., 1 V p-p, 3 Ch., 50.50 MHz ; $47.8 + 2.3 - 24.3 = 25.8$ (dBuV)

2. Measuring Instrument:

a) Spectrum Analyzer

- Anritsu Electric Co., Ltd.

Model : MS62B

(1) Detector function : Peak

(2) Band width : 100 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.

Tuner: TMDH2-A24A

EXHIBIT # : 3

FCC ID : ACJ927139AH

OUR REF. : MKES00-F012

MODEL NO. : VHQ-451

Part 15 Subpart B, (TV Interface Device)

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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	<26.0	2.3	24.4	N/A	<3.9
	4	<26.0	2.3	24.4	N/A	<3.9
Multi Burst 5 V p-p	3	<26.0	2.3	24.4	N/A	<3.9
	4	<26.0	2.3	24.4	N/A	<3.9
Internal Signal	3	<26.0	2.3	24.4	N/A	<3.9
	4	<26.0	2.3	24.4	N/A	<3.9

RF Output Impedance: 75 ohms (Unbalanced)

Note:

1. Sample calculation at

M.B., 1 V p-p, Visual, 3 Ch ; $<26.0 + 2.3 - 24.4 = <3.9$ (dBuV)

2. Measuring Instrument:

a) Spectrum Analyzer

- Anritsu Electric Co., Ltd.

Model : MS62B

(1) Detector function : Peak

(2) Band width : 100 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

Part 15 Subpart B, (TV Interface Device)

15.107 POWER LINE CONDUCTED VOLTAGE

- CONFIGURATION OF THE EQUIPMENT UNDER TEST -

(Arrangement of interface cable on the test table)



Part 15 Subpart B, (TV Interface Device)

15.109 RADIATED EMISSION

- CONFIGURATION OF THE EQUIPMENT UNDER TEST -

(Arrangement of interface cable on the test table)



Part 15 Subpart B, (TV Interface Device)

15.109 RADIATED EMISSION

- CONFIGURATION OF THE EQUIPMENT UNDER TEST -

(Arrangement of interface cable on the test table)

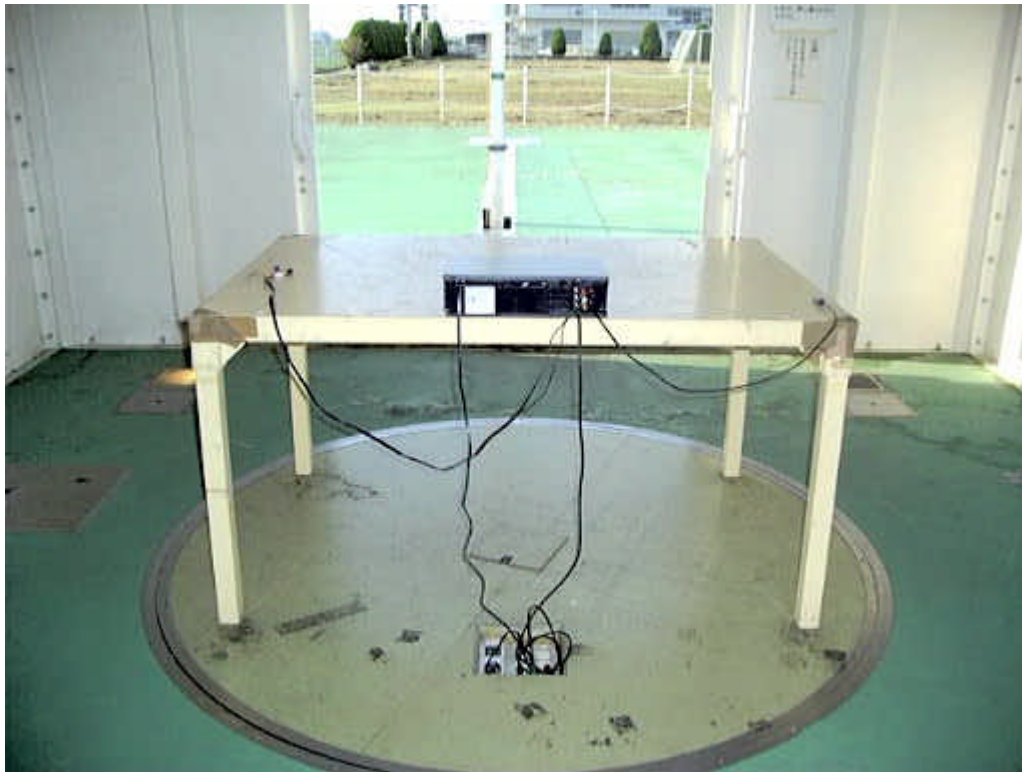
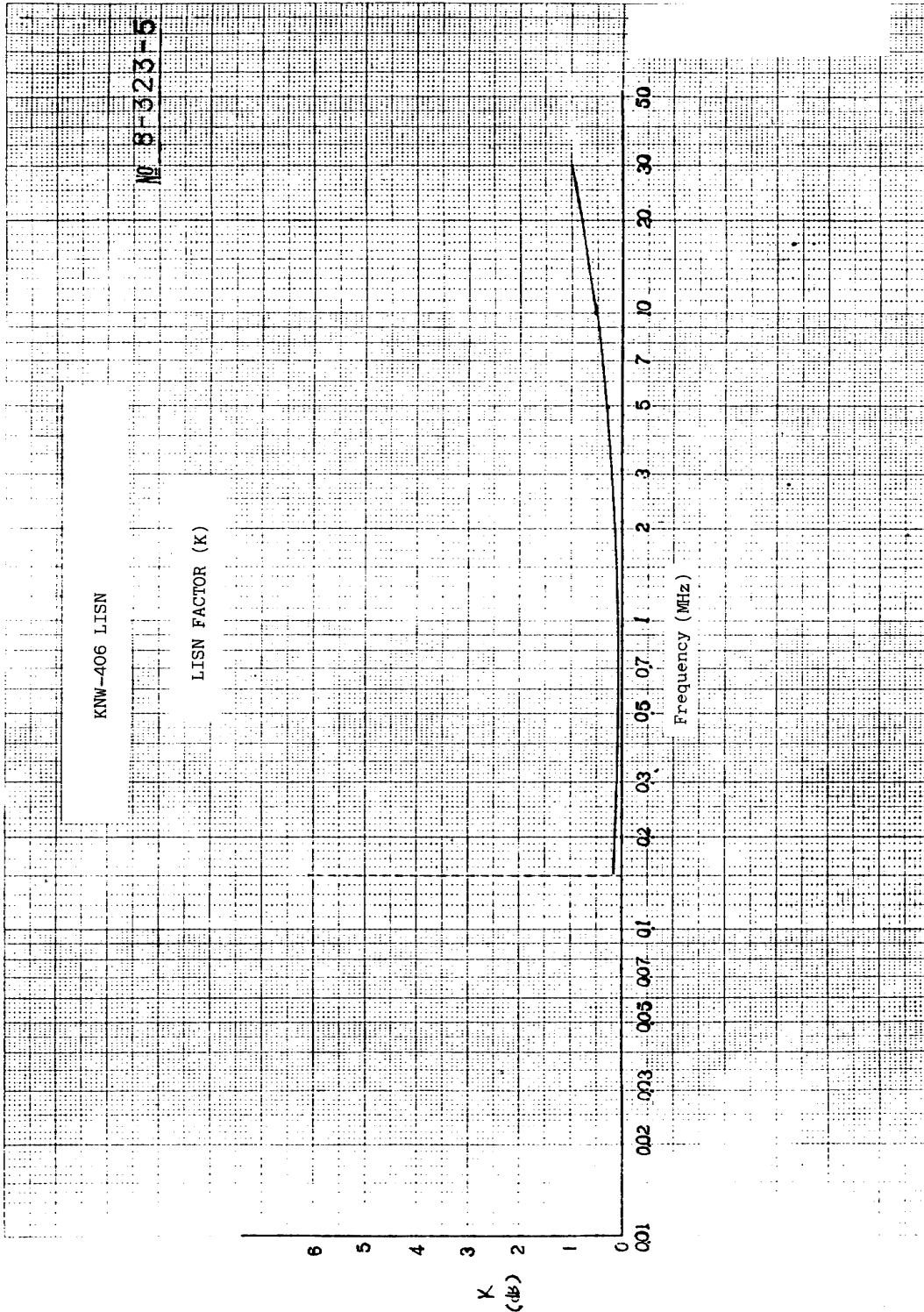
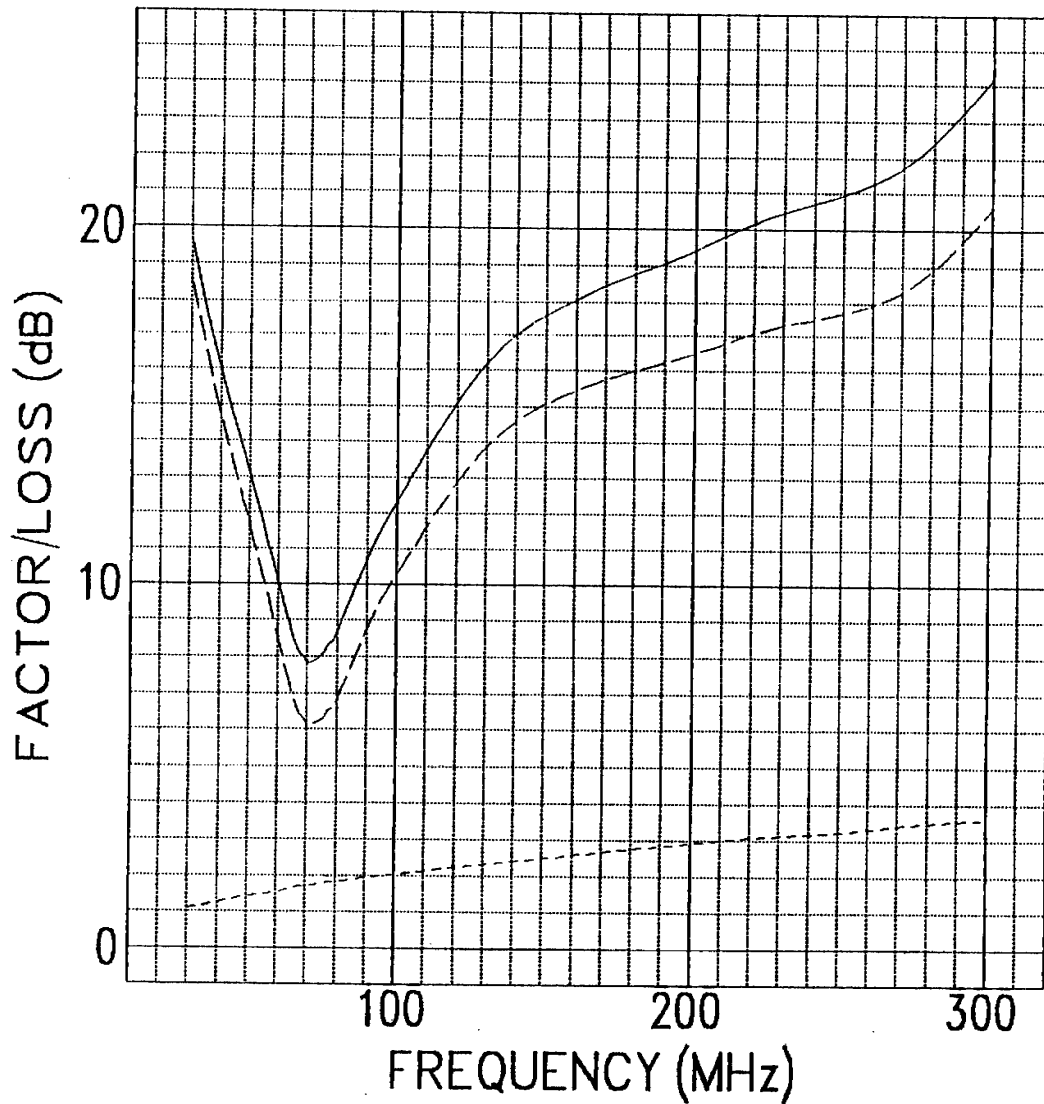


EXHIBIT # : 3
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JIS A4 80 × 250mm



CORRECTION FACTOR OF BBA9106



$$E = V + K$$

E : Field Strength

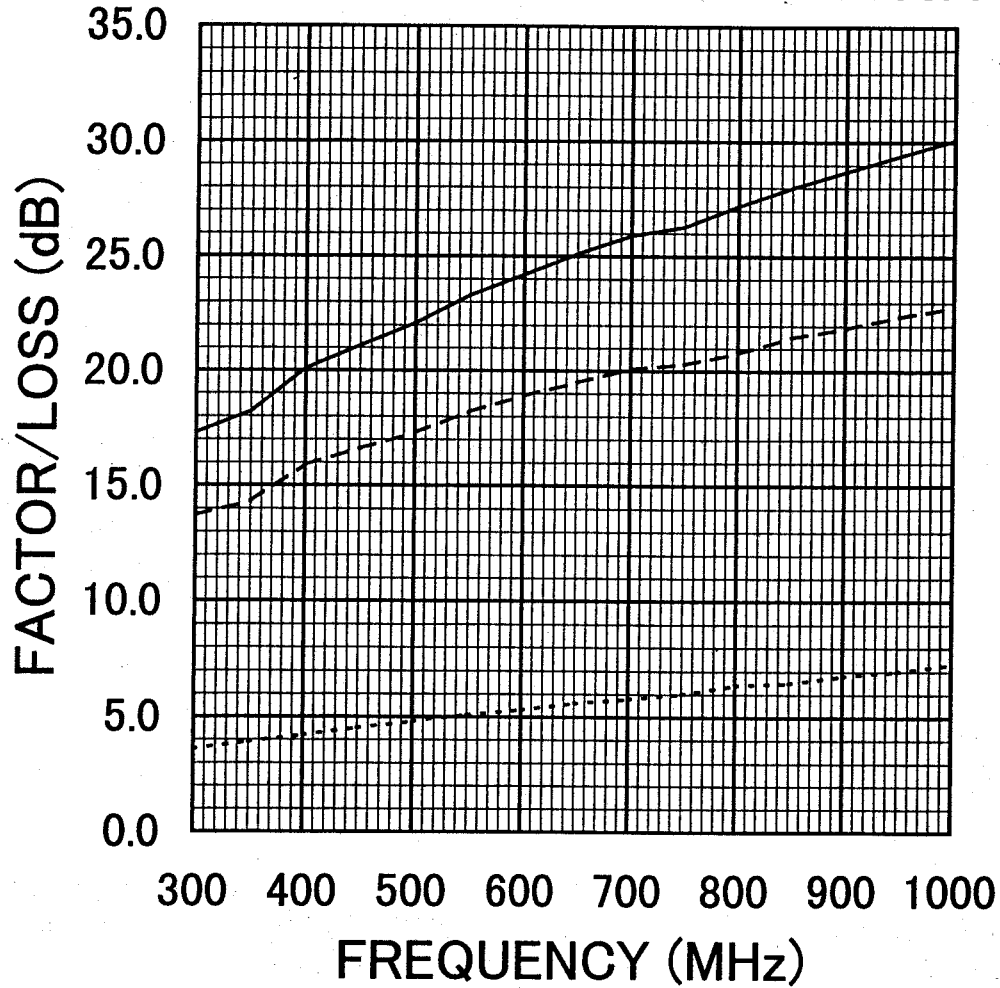
V : Correction Factor (dB)

———— : Correction Factor

----- : Antenna Factor

..... : Cable Loss

CORRECTION FACTOR OF UHALP9108A



$$E = V + K$$

E : Field Strength

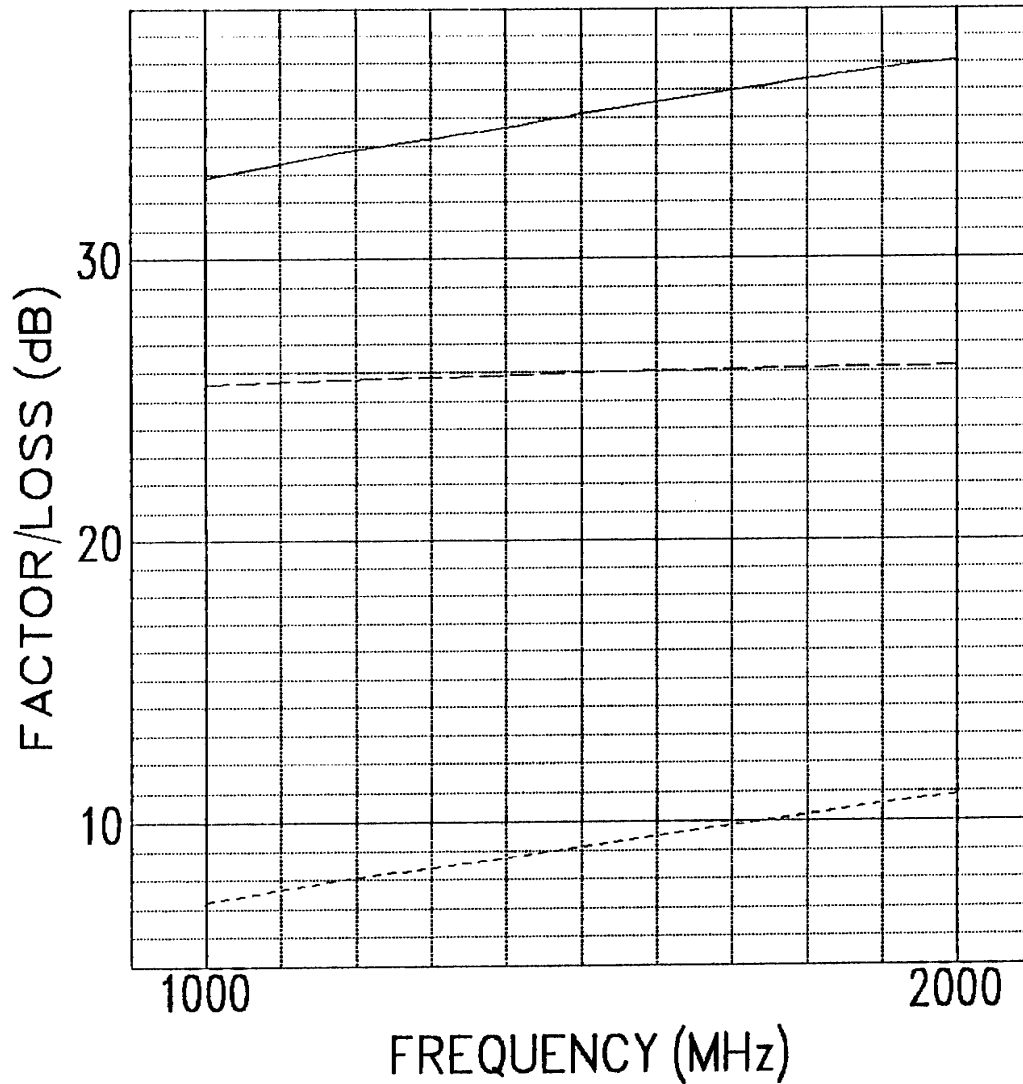
V : Correction Factor (dB)

———— : 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