

MATSUSHITA-KOTOBUKI  
ELECTRONICS INDUSTRIES LTD.

SAIJO DIVISION

ADDRESS: 〒793-8510 247 FUKUTAKE, SAIJO, EHIME, JAPAN  
TELEPHONE: +81-897-56-1111 FAX: +81-897-56-8142

REPORT OF MEASUREMENTS-(Part I) Date: Nov. 24, 2000  
REQUIRED IN (X) SUBPART C (Intentional Radiators : FM Transmitter )  
( ) ( )

EXHIBIT # : 3  
FCC ID : ACJ927141TX  
Our Ref. : MKES00-F017  
Model No. : PV-C2081  
Sheet 1 of 20 Sheets

Name of Manufacturer: Matsushita-Kotobuki Electronics Industries Ltd.

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

Device Under Measurement

FCC ID : ACJ927141TX  
Model No. : PV-C2081  
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  
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

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EXHIBIT # : 3  
FCC ID : ACJ927141TX  
OUR REF. : MKES00-F017  
MODEL NO. : PV-C2081

**Part 15 Subpart C. (Intentional Radiators : FM Transmitter)**

Sheet 2 of 20 Sheets

1) 15.239 (a) Band wide

Output Freq. (MHz)	Limits (kHz)	Band wide (kHz)
91.90	200	135.0
94.69	200	164.3
97.50	200	185.0
97.85	200	144.3
100.84	200	174.3
103.77	200	186.4

(Refer to Sheet 3, 4, 5 of 20 Sheets)

2) 15.107 Power Line Conducted Voltage

Freq. (MHz)	Limits (dBuV)	Interference (dBuV)	
		1-end & Grounded	The other- End & Gro.
0.57	48.0	28.7	31.5
0.72	48.0	31.3	29.7
0.74	48.0	32.8	34.8
0.80	48.0	32.4	33.1
0.82	48.0	32.9	32.9
0.98	48.0	31.2	31.3

(Refer to Sheet 6, 7, 8, 9, 14, 17 of 20 Sheets)

3) 15.209 & 15.239 (b) (c) Radiated Emission

Freq. (MHz)	Limits (dBuV/m)	Emission (dBuV/m)	
		Horiz.	Vert.
91.90	48.0	41.8	37.7
183.80	43.5	27.9	26.8
275.70	46.0	28.9	27.6
367.60	46.0	<13.8	<13.8
459.50	46.0	<16.3	<16.3
551.40	46.0	36.9	34.8

(Refer to Sheet 10, 11, 12, 13, 15, 16, 18, 19, 20 of 20 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.

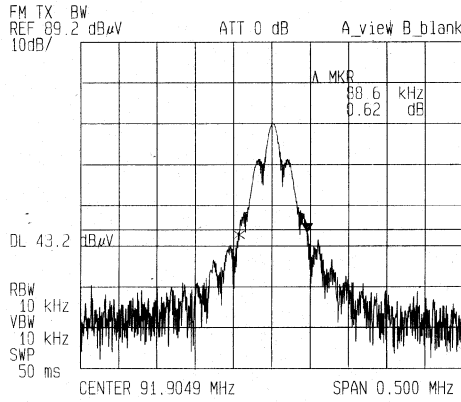
*T. Watanabe*

T. Watanabe  
Engineer

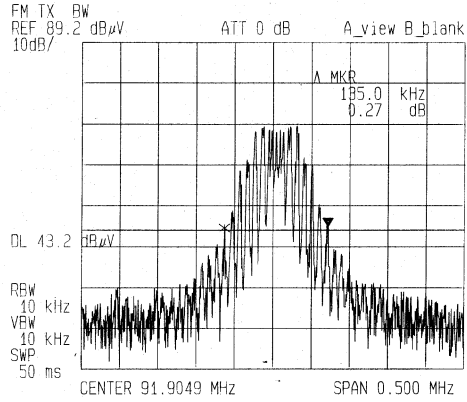
Part 15 Subpart C. (Intentional Radiators : FM Transmitter)  
 1) 15.239 (a) Band wide

Low Band  
 (Lowest: 91.90 MHz)

No Audio signal

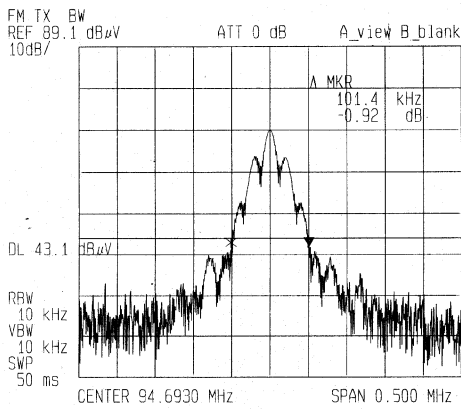


Audio input 1 kHz -7 dBV

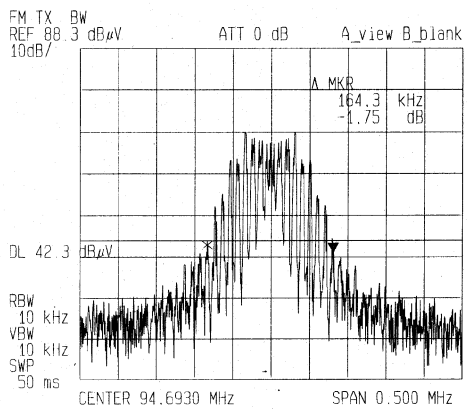


(Middle: 94.69 MHz)

No Audio signal

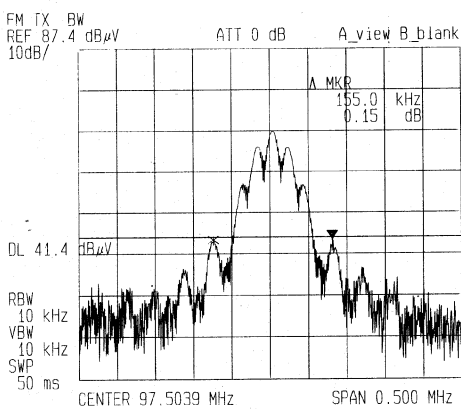


Audio input 1 kHz -7 dBV

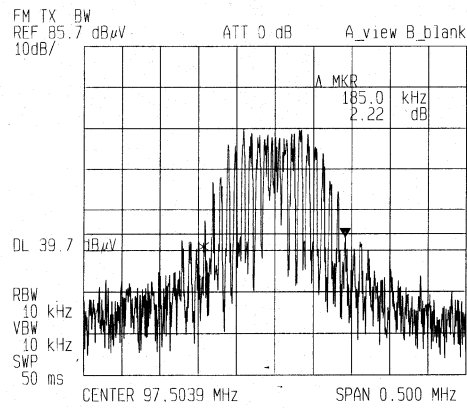


(Highest: 97.50 MHz)

No Audio signal



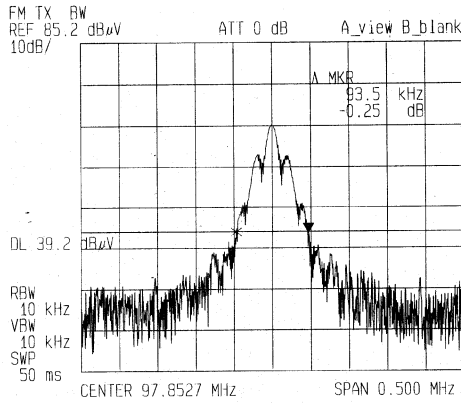
Audio input 1 kHz -7 dBV



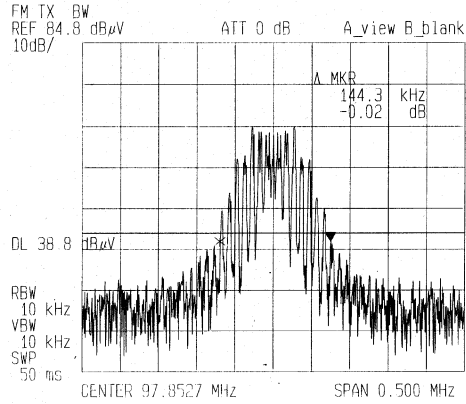
Part 15 Subpart C. (Intentional Radiators : FM Transmitter)  
 1) 15.239 (a) Band wide

High Band  
 (Lowest: 97.85 MHz)

No Audio signal

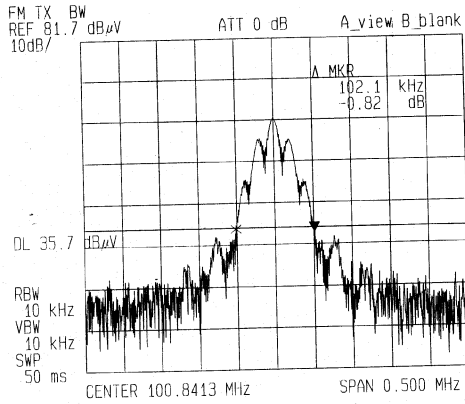


Audio input 1 kHz -7 dBV

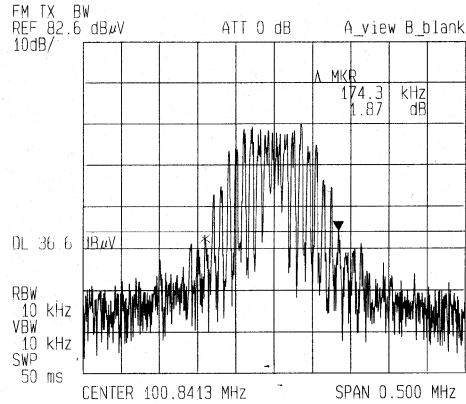


(Middle: 100.84 MHz)

No Audio signal

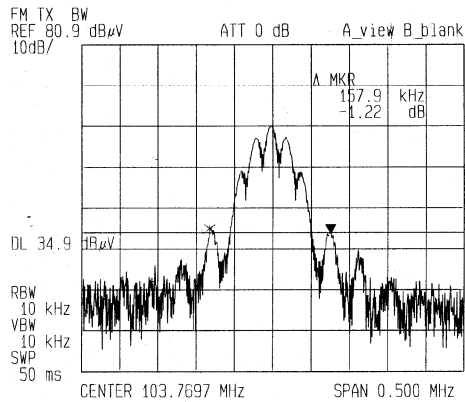


Audio input 1 kHz -7 dBV



(Highest: 103.77 MHz)

No Audio signal



Audio input 1 kHz -7 dBV

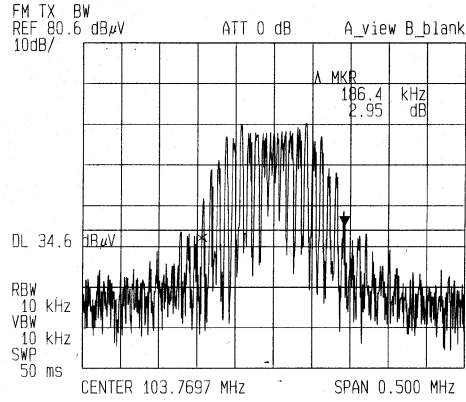


EXHIBIT # : 3  
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OUR REF. : MKES00-F017  
MODEL NO. : PV-C2081  
Sheet 5 of 20 Sheets

Part 15 Subpart C. (Intentional Radiators : FM Transmitter)  
1) 15.239 (a) Band wide

Note: Measuring Instruments:

a) Spectrum Analyzer

- ADVANTEST Co., Ltd.  
Model : R3261A  
(1) Frequency range : 9 kHz to 2.6 GHz  
(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

b) RC Oscillator

- National (Matsushita Communication Industrial Co. Ltd.)  
Model : VP-7201A  
(1) Output Frequency : 5 Hz to 500 kHz  
(2) Output Level : -69.9 dBV to 10 dBV

Part 15 Subpart C. (Intentional Radiators : FM Transmitter)

2) 15.107 Power Line Conducted Voltage  
 No Audio signal

Output Freq. (MHz)		Freq. (MHz)	Meter Read. (dBuV)		LISN Factor (dB)	Interference (dBuV)	
			1-end & Gro.	The other-End&Gro.		1-end & Gro.	The other-End &Gro.
Low Band	91.90	0.57	28.7	30.4	0.1	28.8	30.5
		0.72	30.8	31.5	0.1	30.9	31.6
		0.74	31.9	32.2	0.1	32.0	32.3
		0.80	31.2	32.2	0.1	31.3	32.3
		0.82	32.3	32.8	0.1	32.4	32.9
		0.98	30.7	31.2	0.1	30.8	31.3
	94.69	0.57	28.7	30.1	0.1	28.8	30.2
		0.72	30.8	30.9	0.1	30.9	31.0
		0.74	32.7	32.8	0.1	32.8	32.9
		0.80	32.3	31.4	0.1	32.4	31.5
		0.82	33.0	32.0	0.1	33.1	32.1
		0.98	31.0	31.3	0.1	31.1	31.4
	97.50	0.57	28.3	30.4	0.1	28.4	30.5
		0.72	30.3	32.5	0.1	30.4	32.6
		0.74	32.4	33.9	0.1	32.5	34.0
		0.80	31.9	32.1	0.1	32.0	32.2
		0.82	32.8	31.1	0.1	32.9	31.2
		0.98	31.0	31.8	0.1	31.1	31.9
High Band	97.85	0.57	28.0	29.9	0.1	28.1	30.0
		0.72	30.6	31.3	0.1	30.7	31.4
		0.74	32.0	34.1	0.1	32.1	34.2
		0.80	32.0	32.3	0.1	32.1	32.4
		0.82	33.1	34.0	0.1	33.2	34.1
		0.98	31.0	31.4	0.1	31.1	31.5
	100.84	0.57	28.6	31.4	0.1	28.7	31.5
		0.72	31.2	29.6	0.1	31.3	29.7
		0.74	32.7	34.7	0.1	32.8	34.8
		0.80	32.3	33.0	0.1	32.4	33.1
		0.82	32.8	32.8	0.1	32.9	32.9
		0.98	31.1	31.2	0.1	31.2	31.3
	103.77	0.57	28.0	30.4	0.1	28.1	30.5
		0.72	30.0	30.9	0.1	30.1	31.0
		0.74	33.5	32.6	0.1	33.6	32.7
		0.80	33.1	32.4	0.1	33.2	32.5
		0.82	33.1	34.0	0.1	33.2	34.1
		0.98	31.4	31.6	0.1	31.5	31.7

Part 15 Subpart C. (Intentional Radiators : FM Transmitter)

- 2) 15.107 Power Line Conducted Voltage  
No Audio signal

Note:

1. Sample calculation at

Output 91.90 MHz 1-end & Gro. 0.57 MHz ;  $28.7 + 0.1 = 28.8$  (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

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 C. (Intentional Radiators : FM Transmitter)

2) 15.107 Power Line Conducted Voltage  
 Audio Input 1 kHz -7 dBV

Output Freq. (MHz)		Freq. (MHz)	Meter Read. (dBuV)		LISN Factor (dB)	Interference (dBuV)		
			1-end & Gro.	The other-End&Gro.		1-end & Gro.	The other-End &Gro.	
Low Band	91.90	0.57	28.8	30.4	0.1	28.9	30.5	
		0.72	32.0	30.8	0.1	32.1	30.9	
		0.74	30.1	32.9	0.1	30.2	33.0	
		0.80	29.0	31.6	0.1	29.1	31.7	
		0.82	31.8	31.0	0.1	31.9	31.1	
		0.98	30.8	30.7	0.1	30.9	30.8	
	94.69	0.57	28.3	31.2	0.1	28.4	31.3	
		0.72	31.5	31.2	0.1	31.6	31.3	
		0.74	29.3	32.3	0.1	29.4	32.4	
		0.80	29.6	31.3	0.1	29.7	31.4	
		0.82	31.3	28.7	0.1	31.4	28.8	
		0.98	30.6	29.5	0.1	30.7	29.6	
	97.50	0.57	29.4	30.1	0.1	29.5	30.2	
		0.72	31.6	31.5	0.1	31.7	31.6	
		0.74	31.1	32.4	0.1	31.2	32.5	
		0.80	30.4	31.2	0.1	30.5	31.3	
		0.82	32.2	30.8	0.1	32.3	30.9	
		0.98	30.3	30.9	0.1	30.4	31.0	
	High Band	97.85	0.57	29.0	30.4	0.1	29.1	30.5
			0.72	31.1	33.1	0.1	31.2	33.2
			0.74	30.8	33.5	0.1	30.9	33.6
0.80			30.0	31.9	0.1	30.1	32.0	
0.82			32.0	29.9	0.1	32.1	30.0	
0.98			30.3	31.4	0.1	30.4	31.5	
100.84		0.57	28.7	29.9	0.1	28.8	30.0	
		0.72	31.4	31.9	0.1	31.5	32.0	
		0.74	30.4	33.7	0.1	30.5	33.8	
		0.80	30.1	32.1	0.1	30.2	32.2	
		0.82	32.3	32.8	0.1	32.4	32.9	
		0.98	30.3	31.0	0.1	30.4	31.1	
103.77		0.57	29.3	31.4	0.1	29.4	31.5	
		0.72	32.0	30.2	0.1	32.1	30.3	
		0.74	31.1	33.7	0.1	31.2	33.8	
		0.80	30.4	32.8	0.1	30.5	32.9	
		0.82	32.0	31.6	0.1	32.1	31.7	
		0.98	30.4	30.8	0.1	30.5	30.9	

Part 15 Subpart C. (Intentional Radiators : FM Transmitter)

2) 15.107 Power Line Conducted Voltage  
Audio Input 1 kHz -7 dBV

Note:

1. Sample calculation at

Output 91.91 MHz 1-end & Gro. 0.57 MHz ; 28.8 + 0.1 = 28.9 (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) RC Oscillator

- National (Matsushita Communication Industrial Co. Ltd.)

Model : VP-7201A

(1) Output Frequency : 5 Hz to 500 kHz

(2) Output Level : -69.9 dBV to 10 dBV

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 C. (Intentional Radiators : FM Transmitter)

3) 15.209 & 15.239 (b) (c) Radiated Emission  
 No Audio signal

Output Freq. (MHz)		Frequency (MHz)	Meter Reading Open Volt. (dBuV/m)		Correction Factor (dB) Open Vol.	Emission & 3 meters(dBuV/m)	
			Horiz.	Vert.		Horiz.	Vert.
Low Band	91.90	91.90	30.7	26.6	11.1	41.8	37.7
		183.80	9.0	7.9	18.9	27.9	26.8
		275.70	6.9	5.6	22.0	28.9	27.6
		367.60	<-5.0	<-5.0	18.8	<13.8	<13.8
		459.50	<-5.0	<-5.0	21.3	<16.3	<16.3
		551.40	13.6	11.5	23.3	36.9	34.8
	94.69	94.69	29.6	26.4	11.5	41.1	37.9
		189.38	9.9	8.6	19.0	28.9	27.6
		284.07	7.0	3.3	22.6	29.6	25.9
		378.76	<-5.0	<-5.0	19.2	<14.2	<14.2
		473.45	<-5.0	<-5.0	21.6	<16.6	<16.6
		568.14	13.9	9.8	23.7	37.6	33.5
	97.50	97.50	29.2	25.1	11.8	41.0	36.9
		195.00	8.8	7.0	19.3	28.1	26.3
		292.50	4.4	2.2	23.4	27.8	25.6
		390.00	<-5.0	<-5.0	19.8	<14.8	<14.8
		487.50	<-5.0	<-5.0	21.9	<16.9	<16.9
		585.00	13.1	7.9	23.9	37.0	31.8
High Band	97.85	97.85	24.8	21.8	11.9	36.7	33.7
		195.70	10.1	8.0	19.3	29.4	27.3
		293.55	<-5.0	<-5.0	23.5	<18.5	<18.5
		391.40	13.4	10.7	19.9	33.3	30.6
		489.25	<-5.0	<-5.0	21.9	<16.9	<16.9
		587.10	<-5.0	<-5.0	24.0	<19.0	<19.0
	100.84	100.84	25.7	21.5	12.3	38.0	33.8
		201.68	9.4	7.5	19.5	28.9	27.0
		302.52	<-5.0	<-5.0	17.4	<12.4	<12.4
		403.36	13.8	11.8	20.1	33.9	31.9
		504.20	<-5.0	<-5.0	22.2	<17.2	<17.2
		605.04	<-5.0	<-5.0	24.3	<19.3	<19.3
	103.77	103.77	23.6	19.5	12.6	36.2	32.1
		207.54	8.0	5.7	19.6	27.6	25.3
		311.31	<-5.0	<-5.0	17.6	<12.6	<12.6
		415.08	11.1	9.5	20.5	31.6	30.0
		518.85	<-5.0	<-5.0	22.5	<17.5	<17.5
		622.62	<-5.0	<-5.0	24.7	<19.7	<19.7

Part 15 Subpart C. (Intentional Radiators : FM Transmitter)

3) 15.209 & 15.239 (b) (c) Radiated Emission  
No Audio signal

Note: 1. Sample calculation at  
Output 91.90 MHz Horiz. 91.90 MHz ;  $30.7 + 11.1 = 41.8$  (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) Receiving antenna
- Schwarzbeck
  - Model : VHA9103 30 MHz to 300 MHz
  - Model : UHALP9108A 300 MHz to 1000 MHz
  - The Electro-Mechanics Company
  - Model : 3115 1 GHz to 18 GHz

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 C. (Intentional Radiators : FM Transmitter)

3) 15.209 & 15.239 (b) (c) Radiated Emission  
 Audio Input 1 kHz -7 dBV

Output Freq. (MHz)	Frequency (MHz)	Meter Reading Open Volt. (dBuV/m)		Correction Factor (dB) Open Vol.	Emission & 3 meters(dBuV/m)		
		Horiz.	Vert.		Horiz.	Vert.	
Low Band	91.90	91.90	28.3	24.1	11.1	39.4	35.2
		183.80	9.5	5.7	18.9	28.4	24.6
		275.70	5.2	3.9	22.0	27.2	25.9
		367.60	<-5.0	<-5.0	18.8	<13.8	<13.8
		459.50	<-5.0	<-5.0	21.3	<16.3	<16.3
		551.40	12.0	9.8	23.3	35.3	33.1
	94.69	94.69	27.5	24.9	11.5	39.0	36.4
		189.38	9.0	7.3	19.0	28.0	26.3
		284.07	5.6	3.1	22.6	28.2	25.7
		378.76	<-5.0	<-5.0	19.2	<14.2	<14.2
		473.45	<-5.0	<-5.0	21.6	<16.6	<16.6
		568.14	12.4	7.7	23.7	36.1	31.4
	97.50	97.50	26.8	24.0	11.8	38.6	35.8
		195.00	8.3	6.0	19.3	27.6	25.3
		292.50	2.9	0.9	23.4	26.3	24.3
		390.00	<-5.0	<-5.0	19.8	<14.8	<14.8
		487.50	<-5.0	<-5.0	21.9	<16.9	<16.9
		585.00	10.9	5.7	23.9	34.8	29.6
High Band	97.85	97.85	23.9	20.7	11.9	35.8	32.6
		195.70	7.5	5.0	19.3	26.8	24.3
		293.55	<-5.0	<-5.0	23.5	<18.5	<18.5
		391.40	10.0	7.9	19.9	29.9	27.8
		489.25	<-5.0	<-5.0	21.9	<16.9	<16.9
		587.10	<-5.0	<-5.0	24.0	<19.0	<19.0
	100.84	100.84	24.6	20.9	12.3	36.9	33.2
		201.68	7.5	6.9	19.5	27.0	26.4
		302.52	<-5.0	<-5.0	17.4	<12.4	<12.4
		403.36	11.3	11.0	20.1	31.4	31.1
		504.20	<-5.0	<-5.0	22.2	<17.2	<17.2
		605.04	<-5.0	<-5.0	24.3	<19.3	<19.3
	103.77	103.77	22.8	18.9	12.6	35.4	31.5
		207.54	6.7	5.7	19.6	26.3	25.3
		311.31	<-5.0	<-5.0	17.6	<12.6	<12.6
		415.08	9.5	7.9	20.5	30.0	28.4
		518.85	<-5.0	<-5.0	22.5	<17.5	<17.5
		622.62	<-5.0	<-5.0	24.7	<19.7	<19.7

Part 15 Subpart C. (Intentional Radiators : FM Transmitter)  
Audio Input 1 kHz -7 dBV

Note: 1. Sample calculation at  
Output 91.90 MHz Horiz. 91.90 MHz ;  $28.3 + 11.1 = 39.4$  (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/ 120k Hz/ 1MHz  
(4) Detector function : Average/CISPR Q-Peak/Peak
- b) Receiving antenna - Schwarzbeck  
Model : VHA9103 30 MHz to 300 MHz  
Model : UHALP9108A 300 MHz to 1000 MHz  
- The Electro-Mechanics Company  
Model : 3115 1 GHz to 18 GHz
- c) RC Oscillator - National (Matsushita Communication Industrial Co. Ltd.)  
Model : VP-7201A  
(1) Output Frequency : 5 Hz to 500 kHz  
(2) Output Level : -69.9 dBV to 10 dBV

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.

EXHIBIT # : 3  
FCC ID : ACJ927141TX  
OUR REF. : MKES00-F017  
MODEL NO. : PV-C2081  
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15.107 POWER LINE CONDUCTED VOLTAGE

- CONFIGURATION OF THE EQUIPMENT UNDER TEST -  
( Arrangement of interface cable on the test table )



EXHIBIT # : 3  
FCC ID : ACJ927141TX  
OUR REF. : MKES00-F017  
MODEL NO. : PV-C2081  
Sheet 15 of 20 Sheets

15.209 & 15.239 RADIATED EMISSION

- CONFIGURATION OF THE EQUIPMENT UNDER TEST -  
( Arrangement of interface cable on the test table )



EXHIBIT # : 3  
FCC ID : ACJ927141TX  
OUR REF. : MKES00-F017  
MODEL NO. : PV-C2081  
Sheet 16 of 20 Sheets

15.209 & 15.239 RADIATED EMISSION

- CONFIGURATION OF THE EQUIPMENT UNDER TEST -  
( Arrangement of interface cable on the test table )

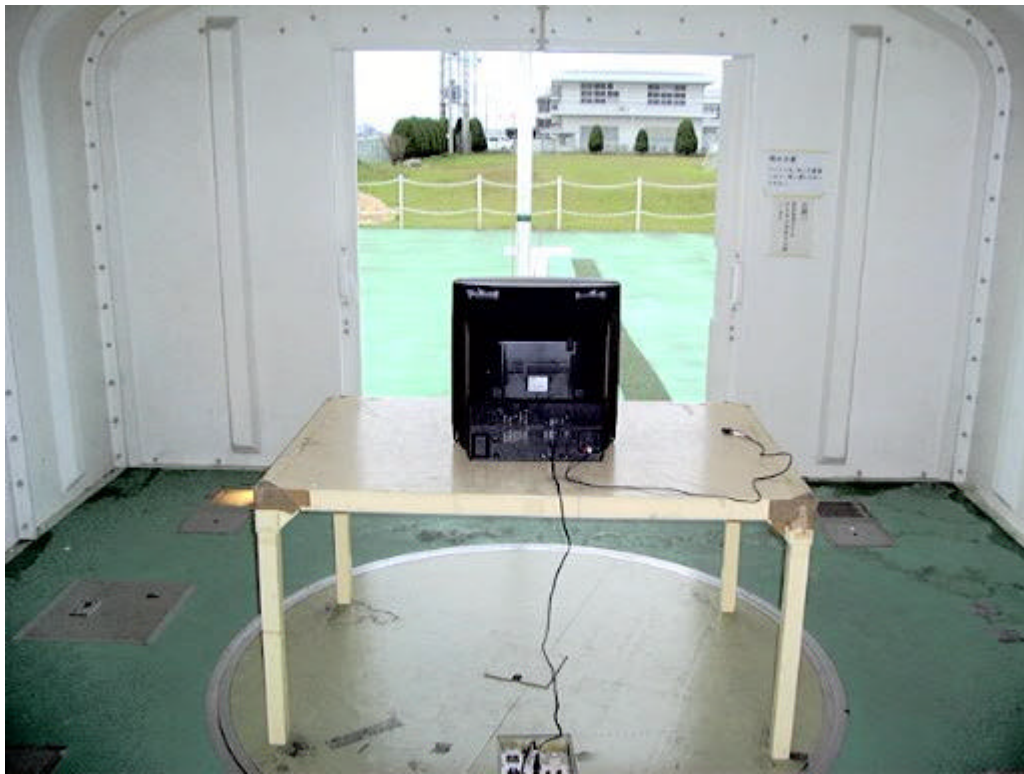


EXHIBIT # : 3

FCC ID : ACJ927141TX

OUR REF. : MKES00-F017

MODEL NO. : PV-C2081

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JIS A4 180 × 250mm

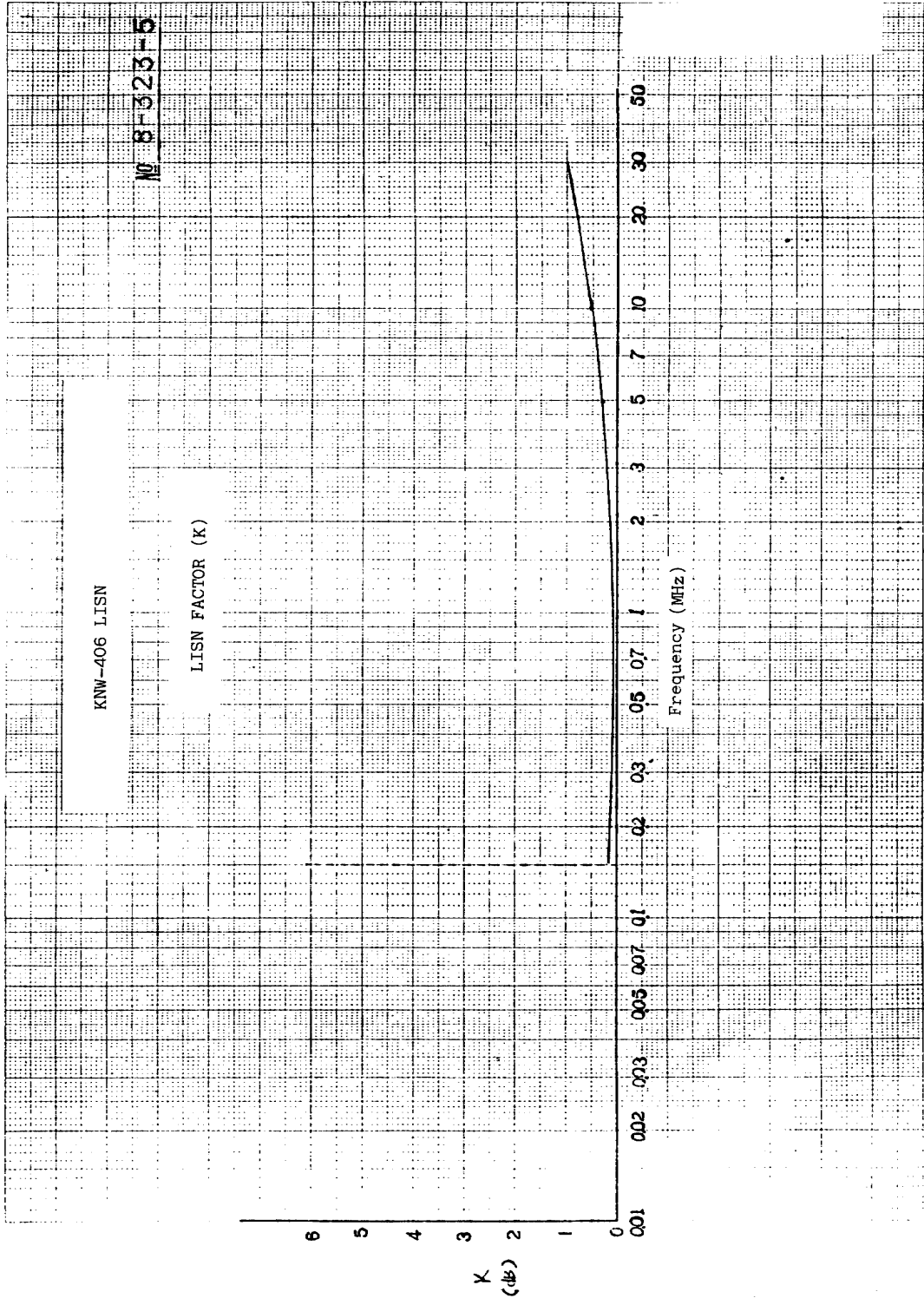


EXHIBIT # : 3

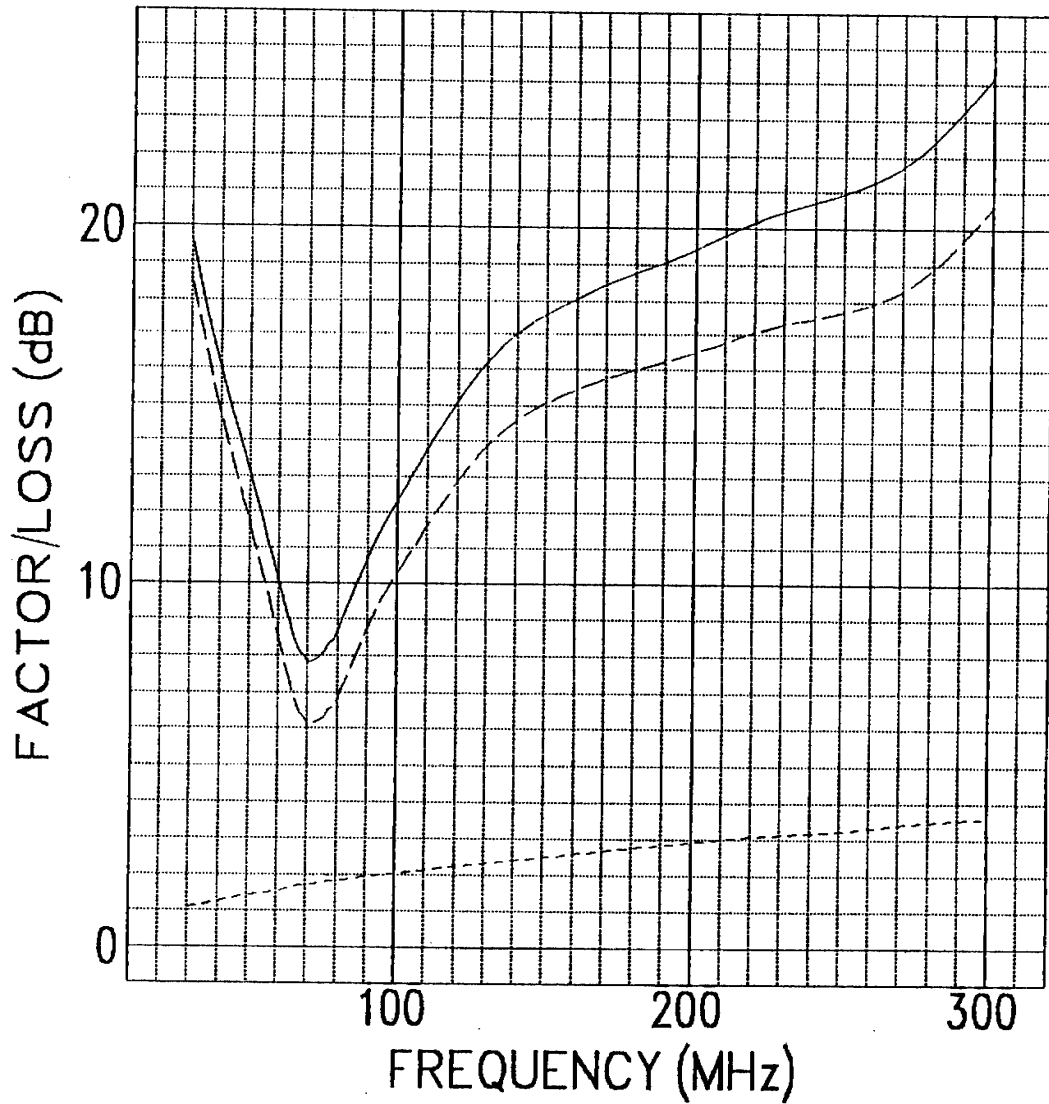
FCC ID : ACJ927141TX

OUR REF. : MKES00-F017

MODEL NO. : PV-C2081

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# CORRECTION FACTOR OF BBA9106



$E = V + K$

E : Field Strength

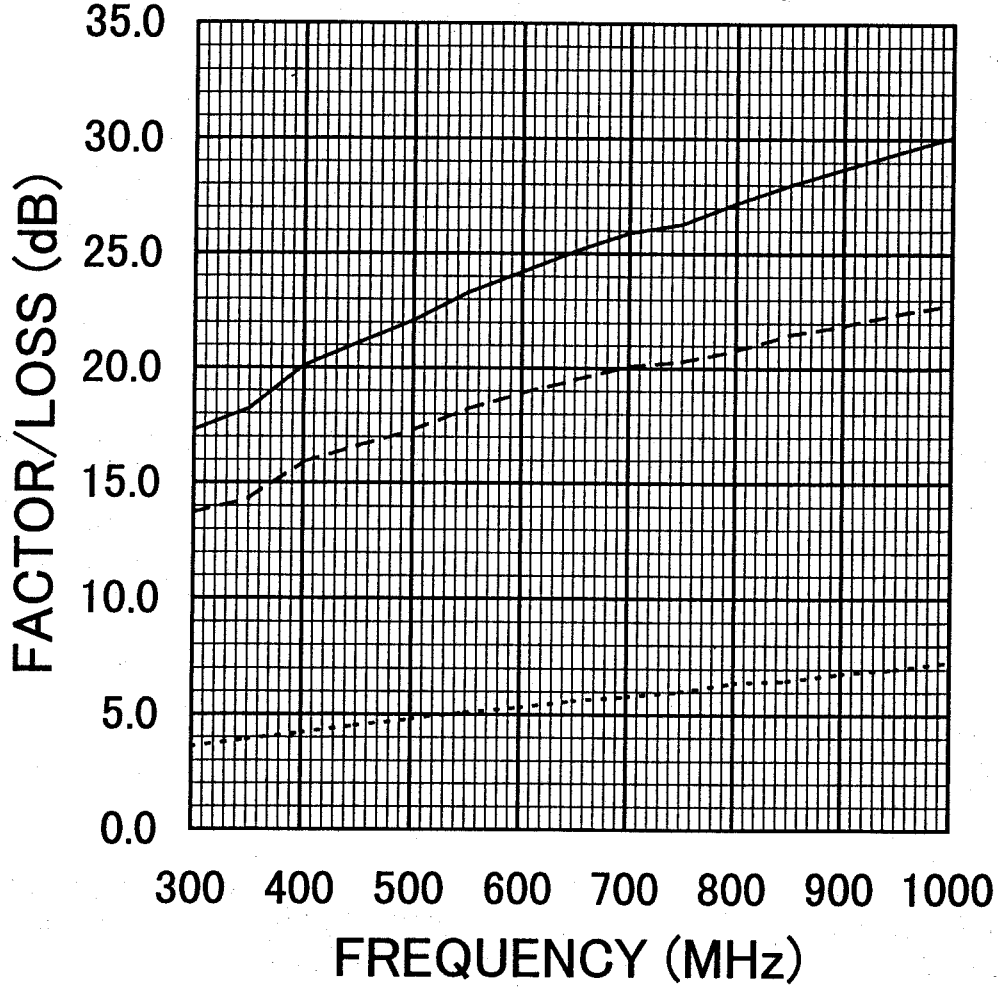
V : Correction Factor (dB)

———— : 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

