JAPAN QUALITY ASSURANCE ORGANIZATION
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PHONE (03) 3416-0111, TELEX 242-2531 JQA J FAX (03) 3416-9691

FCC ID : AK8SLVM20HF

REPORT OF MEASUREMENTS

Date : March 27, 1998
Issue in : Tokyo, Japan

JQA APPLICATION NO.: 80-70827

1. Applicant : Sony Corporation
   7-35, 6-chome, Kitashinagawa,
   Shinagawa-ku, Tokyo 141, Japan

2. Manufacturer : Sony Corporation
   7-35, 6-chome, Kitashinagawa,
   Shinagawa-ku, Tokyo 141, Japan

3. Description of Equipment : Transmitter

   a) FCC ID : AK8SLVM20HF
   b) Trade Name : SONY
   c) Model No. : SLV-M20HF
   d) Operating Frequency : 13.56 MHz
   e) Power Supply : 120 VAC 60 Hz

4. Applicable Rule : FCC Rules & Regulations Part 15
   Subpart C (June 23, 1989)

5. Place of Measurement : JQA EMC Engineering Dept.

6. Date of Measurement : March 26, 1998 (Completed)

7. Total Pages of This Report : 28 (including this page)

8. I certify that I am authorized to sign for the report and that all the statement in this report and in the exhibits hereto are true and correct to the best my knowledge and belief.

Shigeru Osawa

Shigeru Osawa, Assistant Manager
Testing Div.
EMC Engineering Dept.

1. Transmitter Fundamental and Spurious Emission: [§15.225 & §15.209]

Measurement Method Employed:

Measurements were made under the conditions specified ANSI C63.4.
The transmitter under test was operated continuously in its normal operating mode for the purpose of the measurements. In order to secure the continuous operation of the EUT, rewiring in the circuit was done by the manufacturer so as to affect its intended operation.
The receiving loop antenna was positioned with its plane vertical at 30 meters from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT.
The center of the loop antenna was 1 meter above ground. The wooden turntable was rotated 360 degrees to obtain the highest reading on the field strength meter or on the display of the spectrum analyzer.
The results were shown the maximum value.

Measurement Results:

- Internal Large Antenna -

Operating Frequency : 13.56 MHz
Distance of Measurement : 30 meters

Frequency (MHz)	Field Strength (dB/uV/m)
Fundamental	
13.56	< 27.0
Harmonic Frequency	
27.12	< 27.0

- Internal Small Antenna -

Operating Frequency : 13.56 MHz
Distance of Measurement : 30 meters

Frequency (MHz)	Field Strength (dB/uV/m)
Fundamental	
13.56	< 27.0
Harmonic Frequency	
27.12	< 27.0

The distance of measurements was reduced to 10 meters.

- Internal Large Antenna -
Operating Frequency : 13.56 MHz
Distance of Measurement : 10 meters

Frequency (MHz)	Field Strength (dB/uV/m)
Fundamental	
13.56	41.3
Harmonic Frequency	
27.12	< 27.0

- Internal Small Antenna -
Operating Frequency : 13.56 MHz
Distance of Measurement : 10 meters

Frequency (MHz)	Field Strength (dB/uV/m)
Fundamental	
13.56	< 27.0
Harmonic Frequency	
27.12	< 27.0

Note: 1. Meter reading value shows field strength, because the value includes antenna factor.

2. The symbol of "<" means "or less".

3. Measuring Instrument Setting:

Detector Function : CISPR Quasi-peak Peak
IF Band width : 9 kHz

For fundamental, the measured field strength was extrapolated to distance 30 meters, using the formula that field strength varies as the inverse distance square(40 dB per decade of distance).

Calculation :

$$41.3 \text{ dB/uV/m} - 20\log_{10}((30/10)^2) = 41.3 - 19.1 = 22.2 \text{ dB/uV/m at 30 meters}$$

Limits for fundamental(§15.225(a)) = $20\log_{10}(10000)$ = 80 dB/uV/m

2. Radiated Spurious Emission: [§15.209]

Measurement Method Employed:

Measurements were made under the conditions specified ANSI C63.4.
The transmitter under test was operated continuously in its normal operating mode for the purpose of the measurements. In order to secure the continuous operation of the device under test, rewiring in the circuit was done by the manufacturer so as to affect its intended operation.
The receiving antenna polarized horizontally was varied from 1 to 4 meters and the wooden turntable was rotated 360 degrees to obtain the highest reading on the field strength meter or on the display of the spectrum analyzer.
These measurements were repeated with the receiving antenna polarized vertically.

Measurement Results:

- Internal Large Antenna -
Operating Frequency : 13.56 MHz
Distance of Measurement : 3 meters

Frequency (MHz)	Antenna Factor (dB)	Meter Reading Horizontal (dB/uV)	Meter Reading Vertical (dB/uV)	Field Strength at 3 m Horizontal (uV/m)	Field Strength at 3 m Vertical (uV/m)
40.680	2.3	11.4	22.9	4.8	18.2
54.240	5.0	20.5	16.9	18.8	12.4
67.800	7.1	15.3	11.6	13.2	8.6
81.360	8.9	16.8	13.0	19.3	12.4
94.920	10.4	0.7	0.7	3.6	3.6
108.480	11.7	5.2	0.1	7.0	3.9
122.040	12.9	9.7	2.9	13.5	6.2
135.600	14.0	16.8	13.0	34.7	22.4
149.160	15.0	14.4	9.1	29.5	16.0
162.720	15.9	15.8	10.4	38.5	20.7
176.280	16.7	16.7	6.8	46.8	15.0
189.840	17.5	11.6	7.5	28.5	17.8
203.400	18.2	8.2	5.4	20.9	15.1
216.960	18.9	13.5	6.2	41.7	18.0
230.520	19.6	19.5	13.5	90.2	45.2
244.080	20.2	17.8	13.2	79.4	46.8
257.640	20.8	12.8	8.3	47.9	28.5
271.200	21.3	10.2	10.7	37.6	39.8
284.760	21.9	10.1	11.1	39.8	44.7
298.320	22.4	11.5	10.2	49.5	42.7
311.880	22.9	13.6	10.1	66.8	44.7
325.440	23.3	7.7	5.9	35.5	28.8
339.000	23.8	5.0	4.3	27.5	25.4
352.560	24.2	12.0	12.6	64.6	69.2
366.120	24.6	10.9	10.7	59.6	58.2
379.680	25.0	10.7	11.3	61.0	65.3
393.240	25.4	6.7	7.2	40.3	42.7
406.800	25.8	7.7	7.1	47.3	44.2
420.360	26.2	1.7	0.8	24.8	22.4
433.920	26.5	4.5	2.4	35.5	27.9
447.480	26.9	1.3	-1.2	25.7	19.3
461.040	27.2	3.8	3.2	35.5	33.1
474.600	27.5	-1.8	0.3	19.3	24.5
488.160	27.9	-1.4	3.3	21.1	36.3
501.720	28.2	< -5.0	-1.8	< 14.5	20.9
515.280	28.5	-0.6	-0.1	24.8	26.3
528.840	28.9	-1.9	< -5.0	22.4	< 15.7
542.400	29.2	< -5.0	-1.4	< 16.2	24.5
555.960	29.5	< -5.0	< -5.0	< 16.8	< 16.8
569.520	29.9	0.3	0.8	32.4	34.3
583.080	30.2	< -5.0	-1.9	< 18.2	26.0
596.640	30.5	1.7	3.2	40.7	48.4
610.200	30.8	< -5.0	-1.4	< 19.5	29.5

Frequency (MHz)	Antenna Factor (dB)	Meter Reading Horizontal (dB/uV)	Meter Reading Vertical (dB/uV)	Field Strength at 3 m Horizontal (uV/m)	Field Strength at 3 m Vertical (uV/m)
623.760	31.1	0.9	1.3	39.8	41.7
637.320	31.3	< -5.0	< -5.0	< 20.7	< 20.7
650.880	31.6	-0.8	-1.2	34.7	33.1
664.440	31.9	< -5.0	< -5.0	< 22.1	< 22.1
678.000	32.2	-0.8	-1.2	37.2	35.5
691.560	32.4	< -5.0	< -5.0	< 23.4	< 23.4
705.120	32.7	-0.9	-0.2	38.9	42.2
718.680	32.9	< -5.0	< -5.0	< 24.8	< 24.8
732.240	33.2	-1.2	-0.3	39.8	44.2
745.800	33.4	< -5.0	< -5.0	< 26.3	< 26.3
759.360	33.7	0.7	1.0	52.5	54.3
772.920	33.9	< -5.0	< -5.0	< 27.9	< 27.9
786.480	34.1	< -5.0	-0.7	< 28.5	46.8
800.040	34.4	< -5.0	< -5.0	< 29.5	< 29.5
813.600	34.6	< -5.0	< -5.0	< 30.2	< 30.2
827.160	34.8	< -5.0	< -5.0	< 30.9	< 30.9
840.720	35.0	< -5.0	< -5.0	< 31.6	< 31.6
854.280	35.3	< -5.0	< -5.0	< 32.7	< 32.7
867.840	35.5	< -5.0	< -5.0	< 33.5	< 33.5
881.400	35.7	< -5.0	< -5.0	< 34.3	< 34.3
894.960	35.9	< -5.0	< -5.0	< 35.1	< 35.1
908.520	36.1	< -5.0	< -5.0	< 35.9	< 35.9
922.080	36.3	< -5.0	< -5.0	< 36.7	< 36.7
935.640	36.5	< -5.0	< -5.0	< 37.6	< 37.6
949.200	36.7	< -5.0	< -5.0	< 38.5	< 38.5
962.760	36.9	< -5.0	< -5.0	< 39.4	< 39.4
976.320	37.1	< -5.0	< -5.0	< 40.3	< 40.3
989.880	37.3	< -5.0	< -5.0	< 41.2	< 41.2

Notes: 1. The spectrum was checked from 30 MHz to 1000 MHz. All emissions not listed were found to be more than 20 dB below the limits.
2. The symbol of "<" means "or less".
3. The cable loss was including in the antenna factor.
4. Sample calculation:

At 40.680 MHz

$10^{(Af + Mr)/20} = 10^{(2.3 + 22.9)/20} = 18.2$ uV/m

18.2 x (D-1 / D-2) in meter = 18.2 uV/m

Where,

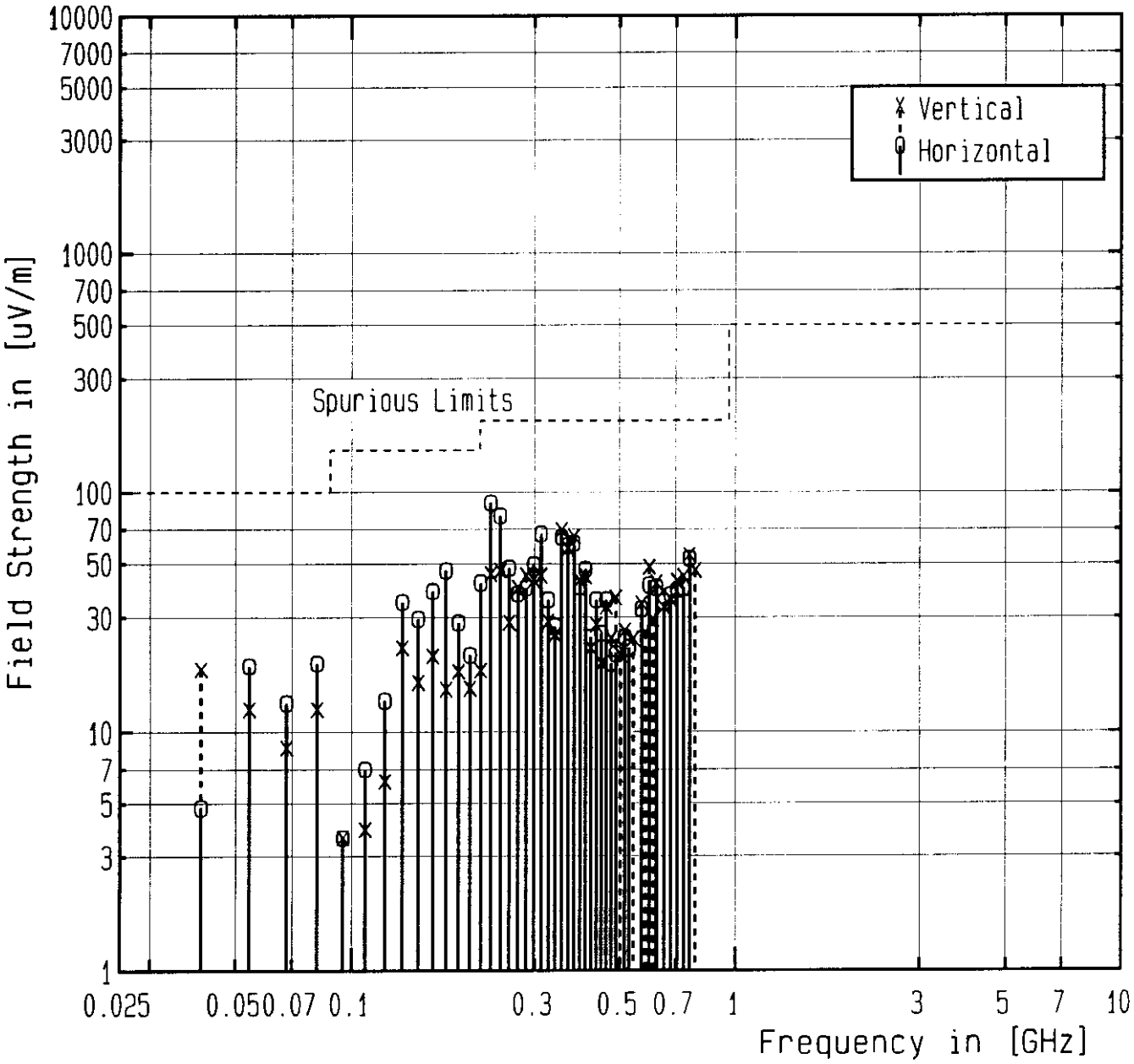
Af = Antenna Factor including the cable loss
Mr = Meter reading
D-1 = Measured distance in meter : 3 m
D-2 = Specified distance in meter : 3 m

5. Measuring Instrument Setting:

Detector function : CISPR quasi-peak
IF Bandwidth : 120 kHz

Radiated Spurious Emissions

FCC ID : AK8SLVM20HF
Oprerating Frequency : 13.56 MHz
Test Condition : Internal Large Antenna



Measurement Results:

- Internal Small Antenna -
Operating Frequency : 13.56 MHz
Distance of Measurement : 3 meters

Frequency (MHz)	Antenna Factor (dB)	Meter Reading Horizontal (dB/uV)	Meter Reading Vertical (dB/uV)	Field Strength at 3 m Horizontal (uV/m)	Field Strength at 3 m Vertical (uV/m)
40.680	2.3	3.0	16.0	1.8	8.2
54.240	5.0	5.0	3.2	3.2	2.6
67.800	7.1	14.0	9.5	11.4	6.8
81.360	8.9	8.3	5.0	7.2	5.0
94.920	10.4	1.5	1.5	3.9	3.9
108.480	11.7	4.4	-1.8	6.4	3.1
122.040	12.9	6.6	0.3	9.4	4.6
135.600	14.0	12.4	10.2	20.9	16.2
149.160	15.0	18.1	11.3	45.2	20.7
162.720	15.9	14.6	9.6	33.5	18.8
176.280	16.7	15.8	10.3	42.2	22.4
189.840	17.5	10.2	6.8	24.3	16.4
203.400	18.2	9.3	5.5	23.7	15.3
216.960	18.9	12.5	5.4	37.2	16.4
230.520	19.6	18.9	12.2	84.1	38.9
244.080	20.2	17.0	13.6	72.4	49.0
257.640	20.8	12.1	9.2	44.2	31.6
271.200	21.3	10.7	11.1	39.8	41.7
284.760	21.9	9.3	8.3	36.3	32.4
298.320	22.4	9.8	9.5	40.7	39.4
311.880	22.9	13.5	10.1	66.1	44.7
325.440	23.3	8.4	5.8	38.5	28.5
339.000	23.8	4.2	3.0	25.1	21.9
352.560	24.2	8.9	9.4	45.2	47.9
366.120	24.6	10.1	10.2	54.3	55.0
379.680	25.0	8.1	9.7	45.2	54.3
393.240	25.4	7.9	6.7	46.2	40.3
406.800	25.8	6.2	4.7	39.8	33.5
420.360	26.2	1.1	0.2	23.2	20.9
433.920	26.5	3.6	0.3	32.0	21.9
447.480	26.9	2.2	-1.2	28.5	19.3
461.040	27.2	3.3	2.9	33.5	32.0
474.600	27.5	2.0	0.8	29.9	26.0
488.160	27.9	3.1	-0.1	35.5	24.5
501.720	28.2	< -5.0	< -5.0	< 14.5	< 14.5
515.280	28.5	0.6	-1.4	28.5	22.6
528.840	28.9	< -5.0	< -5.0	< 15.7	< 15.7
542.400	29.2	0.1	-1.4	29.2	24.5
555.960	29.5	-1.4	< -5.0	25.4	< 16.8
569.520	29.9	1.3	1.1	36.3	35.5
583.080	30.2	-1.6	-1.8	26.9	26.3
596.640	30.5	-0.3	0.0	32.4	33.5
610.200	30.8	-0.9	-1.3	31.3	29.9

Frequency (MHz)	Antenna Factor (dB)	Meter Reading Horizontal (dB/uV)	Meter Reading Vertical (dB/uV)	Field Strength at 3 m Horizontal (uV/m)	Field Strength at 3 m Vertical (uV/m)
623.760	31.1	-1.9	-1.2	28.8	31.3
637.320	31.3	< -5.0	< -5.0	< 20.7	< 20.7
650.880	31.6	-1.2	-0.7	33.1	35.1
664.440	31.9	< -5.0	< -5.0	< 22.1	< 22.1
678.000	32.2	-0.3	-1.0	39.4	36.3
691.560	32.4	< -5.0	< -5.0	< 23.4	< 23.4
705.120	32.7	-0.3	-0.1	41.7	42.7
718.680	32.9	-1.7	-1.9	36.3	35.5
732.240	33.2	-0.6	-0.3	42.7	44.2
745.800	33.4	< -5.0	-1.6	< 26.3	38.9
759.360	33.7	0.5	1.9	51.3	60.3
772.920	33.9	< -5.0	-1.8	< 27.9	40.3
786.480	34.1	< -5.0	0.2	< 28.5	51.9
800.040	34.4	< -5.0	< -5.0	< 29.5	< 29.5
813.600	34.6	< -5.0	< -5.0	< 30.2	< 30.2
827.160	34.8	< -5.0	< -5.0	< 30.9	< 30.9
840.720	35.0	< -5.0	< -5.0	< 31.6	< 31.6
854.280	35.3	< -5.0	< -5.0	< 32.7	< 32.7
867.840	35.5	< -5.0	< -5.0	< 33.5	< 33.5
881.400	35.7	< -5.0	< -5.0	< 34.3	< 34.3
894.960	35.9	< -5.0	< -5.0	< 35.1	< 35.1
908.520	36.1	< -5.0	< -5.0	< 35.9	< 35.9
922.080	36.3	< -5.0	< -5.0	< 36.7	< 36.7
935.640	36.5	< -5.0	< -5.0	< 37.6	< 37.6
949.200	36.7	< -5.0	< -5.0	< 38.5	< 38.5
962.760	36.9	< -5.0	< -5.0	< 39.4	< 39.4
976.320	37.1	< -5.0	< -5.0	< 40.3	< 40.3
989.880	37.3	< -5.0	< -5.0	< 41.2	< 41.2

Notes: 1. The spectrum was checked from 30 MHz to 1000 MHz. All emissions not listed were found to be more than 20 dB below the limits.
2. The symbol of "<" means "or less".
3. The cable loss was including in the antenna factor.
4. Sample calculation:

At 40.680 MHz

$10^{(Af + Mr)/20} = 10^{(2.3 + 16.0)/20} = 8.2$ uV/m

8.2 x (D-1 / D-2) in meter = 8.2 uV/m

Where,

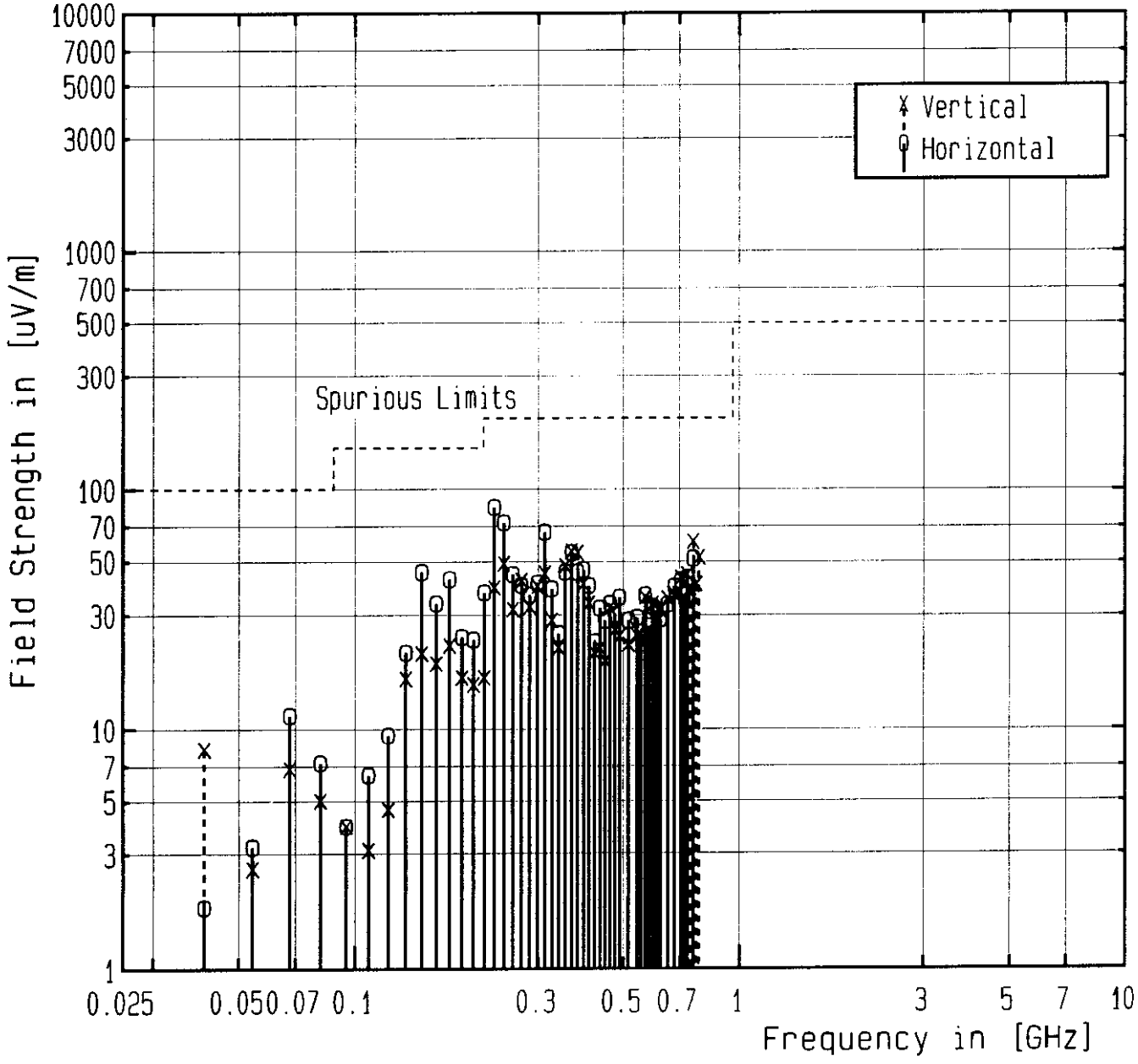
Af = Antenna Factor including the cable loss
Mr = Meter reading
D-1 = Measured distance in meter : 3 m
D-2 = Specified distance in meter : 3 m

5. Measuring Instrument Setting:

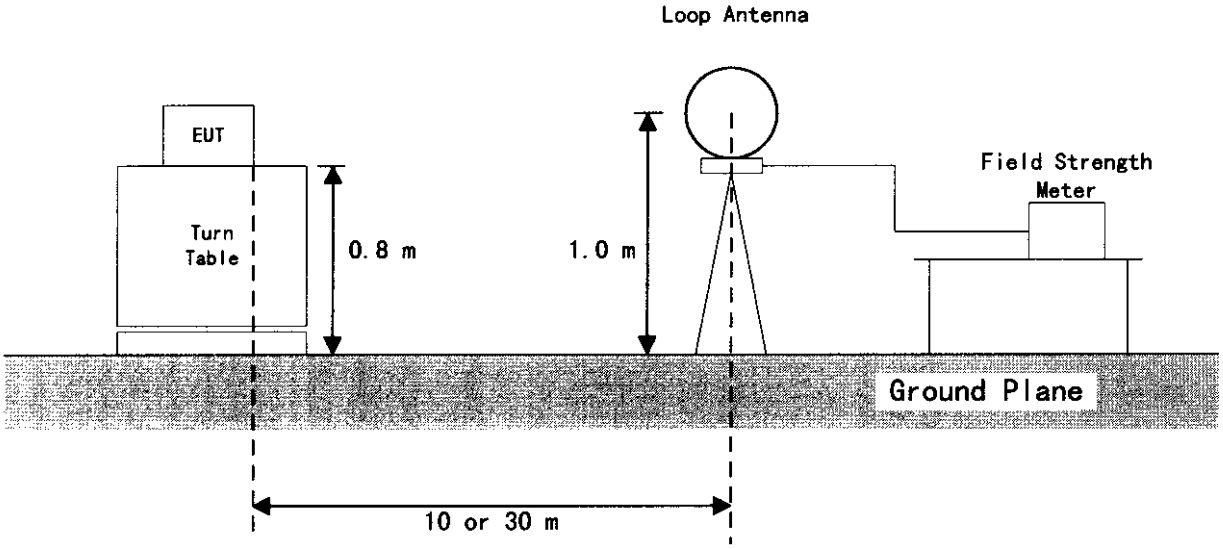
Detector function : CISPR quasi-peak
IF Bandwidth : 120 kHz

Radiated Spurious Emissions

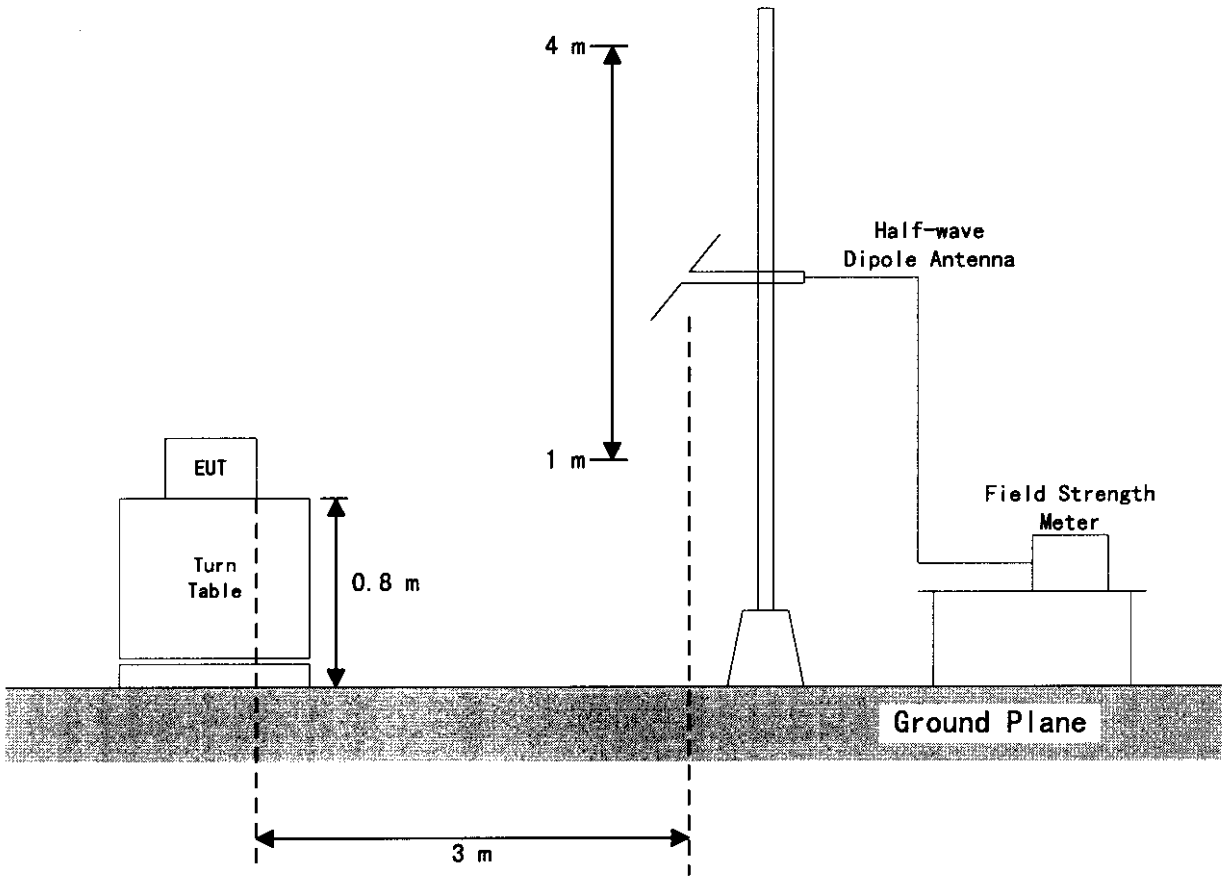
FCC ID : AK8SLVM20HF
Oprerating Frequency : 13.56 MHz
Test Condition : Internal Small Antenna



MEASUREMENT SET-UP FOR UP TO 30 MHz



MEASUREMENT SET-UP FOR RADIATED EMISSIONS



3. Emission Limitation: [§15.231(c)]

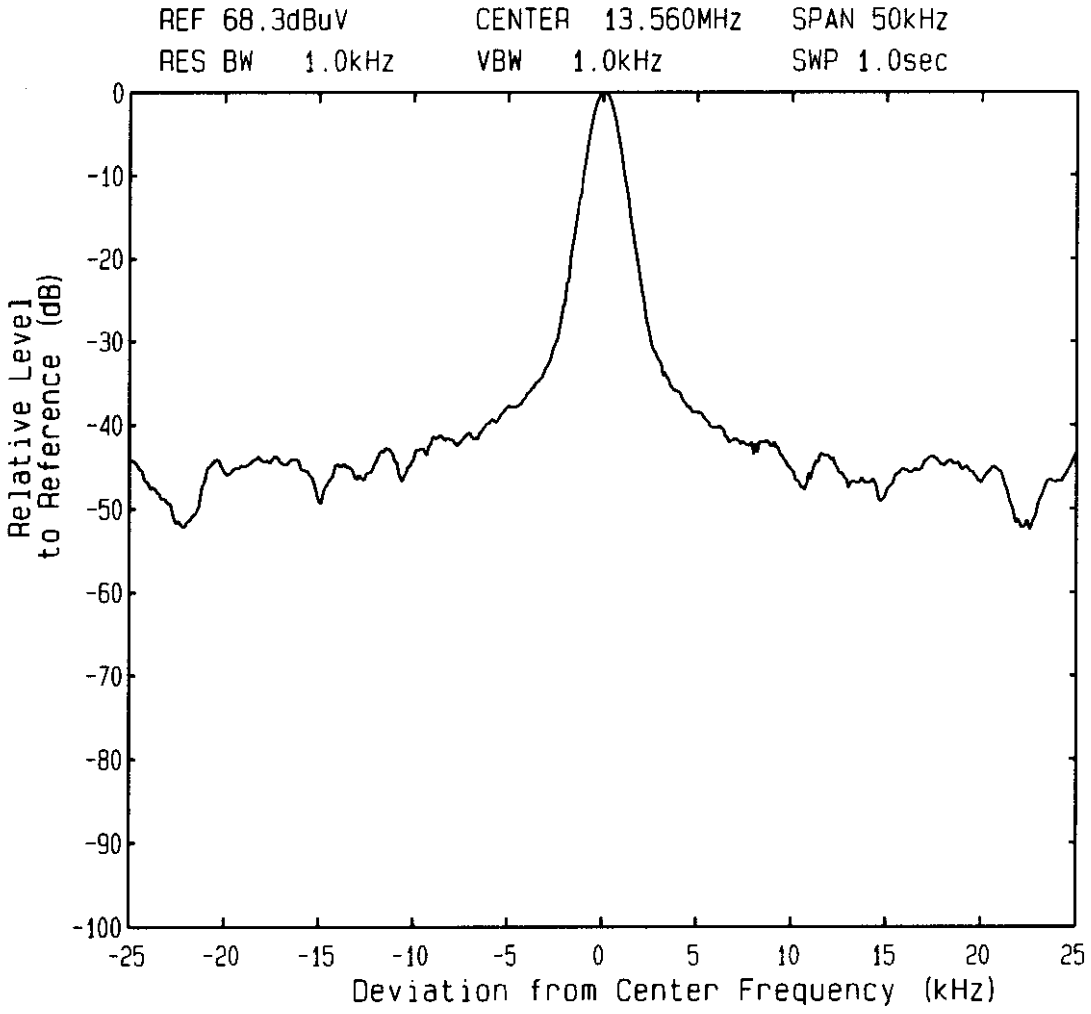
Measurement Method Employed: By using a spectrum analyzer with a vertical antenna for picking up the signal, the measurements of the fundamental frequency were made under the following transmitting modes of the EUT.

Measurements Results :
Refer to the attached graphs.

Emission Limitation

FCC ID : AK8SLVM20HF
Model : SLV-M20HF

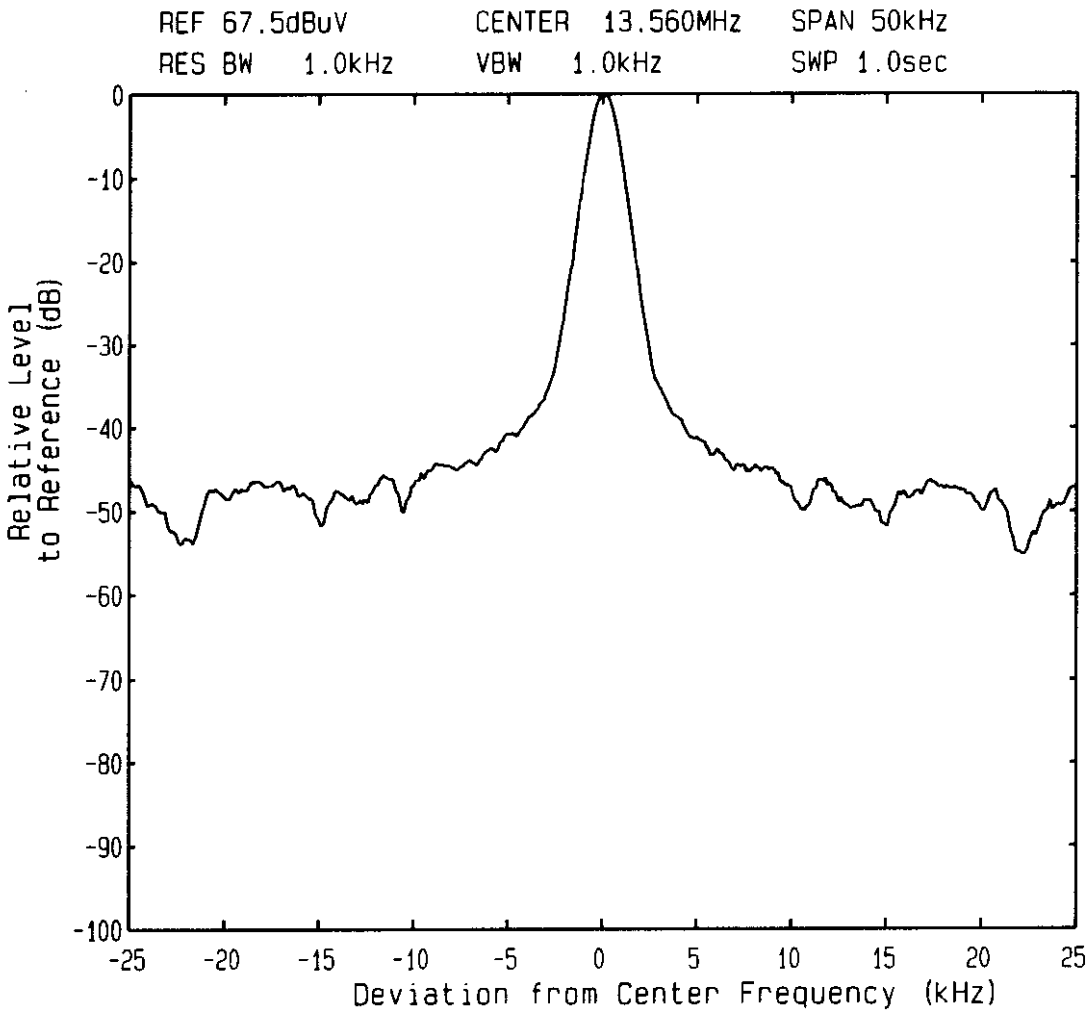
Mode of EUT : Internal Large Antenna
Internal Modulation



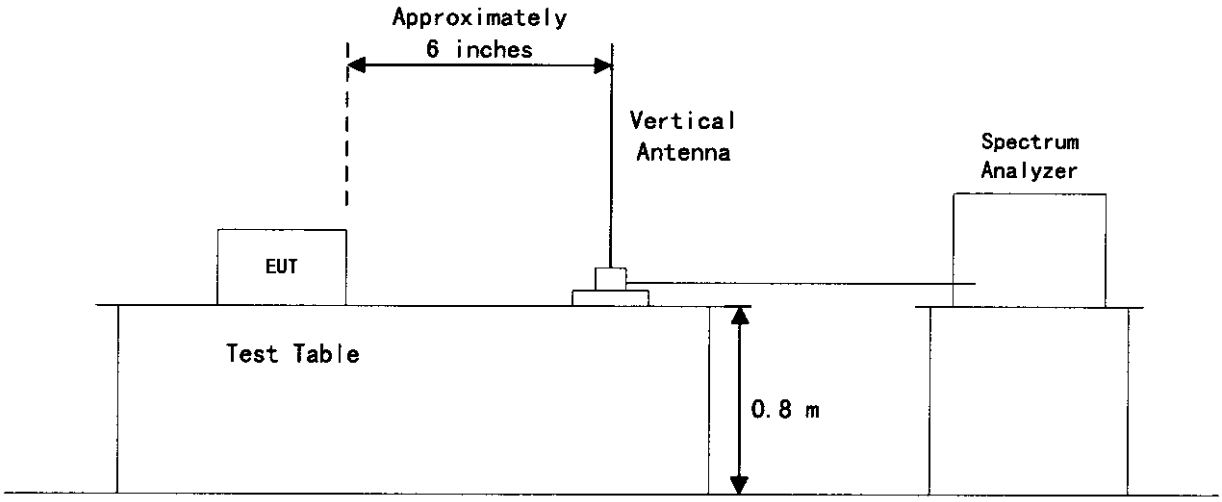
Emission Limitation

FCC ID : AK8SLVM20HF
Model : SLV-M20HF

Mode of EUT : Internal Small Antenna
Internal Modulation



MESUREMENT SET-UP FOR BAND WIDTH



4. Power Line Conducted Interference Voltage : [§15.207]

- Internal Large Antenna -

Frequency (MHz)	LISN Factor (dB)	Meter Reading(dB) One end & grounded	Meter Reading(dB) Other end & Grounded	Results (dB/uV) One end & grounded	Results (dB/uV) Other end & Grounded
0.45	0.2	< 0.0	< 0.0	< 0.2	< 0.2
0.50	0.2	37.6	37.9	37.8	38.1
0.67	0.2	35.2	36.0	35.4	36.2
0.84	0.2	34.8	35.9	35.0	36.1
1.01	0.2	37.1	37.7	37.3	37.9
1.42	0.2	34.5	35.2	34.7	35.4
2.08	0.2	30.3	29.5	30.5	29.7
3.16	0.2	28.9	27.0	29.1	27.2
4.16	0.2	29.5	27.5	29.7	27.7
6.07	0.2	30.0	26.6	30.2	26.8
8.06	0.2	20.5	19.5	20.7	19.7
10.04	0.2	13.3	13.0	13.5	13.2
11.93	0.2	15.6	11.7	15.8	11.9
13.56	0.3	24.9	20.3	25.2	20.6
16.00	0.3	10.6	10.8	10.9	11.1
18.00	0.4	< 0.0	< 0.0	< 0.4	< 0.4
20.00	0.4	< 0.0	< 0.0	< 0.4	< 0.4
23.00	0.5	10.4	12.3	10.9	12.8
25.00	0.5	< 0.0	< 0.0	< 0.5	< 0.5
27.00	0.5	36.2	37.2	36.7	37.7
30.00	0.6	< 0.0	< 0.0	< 0.6	< 0.6

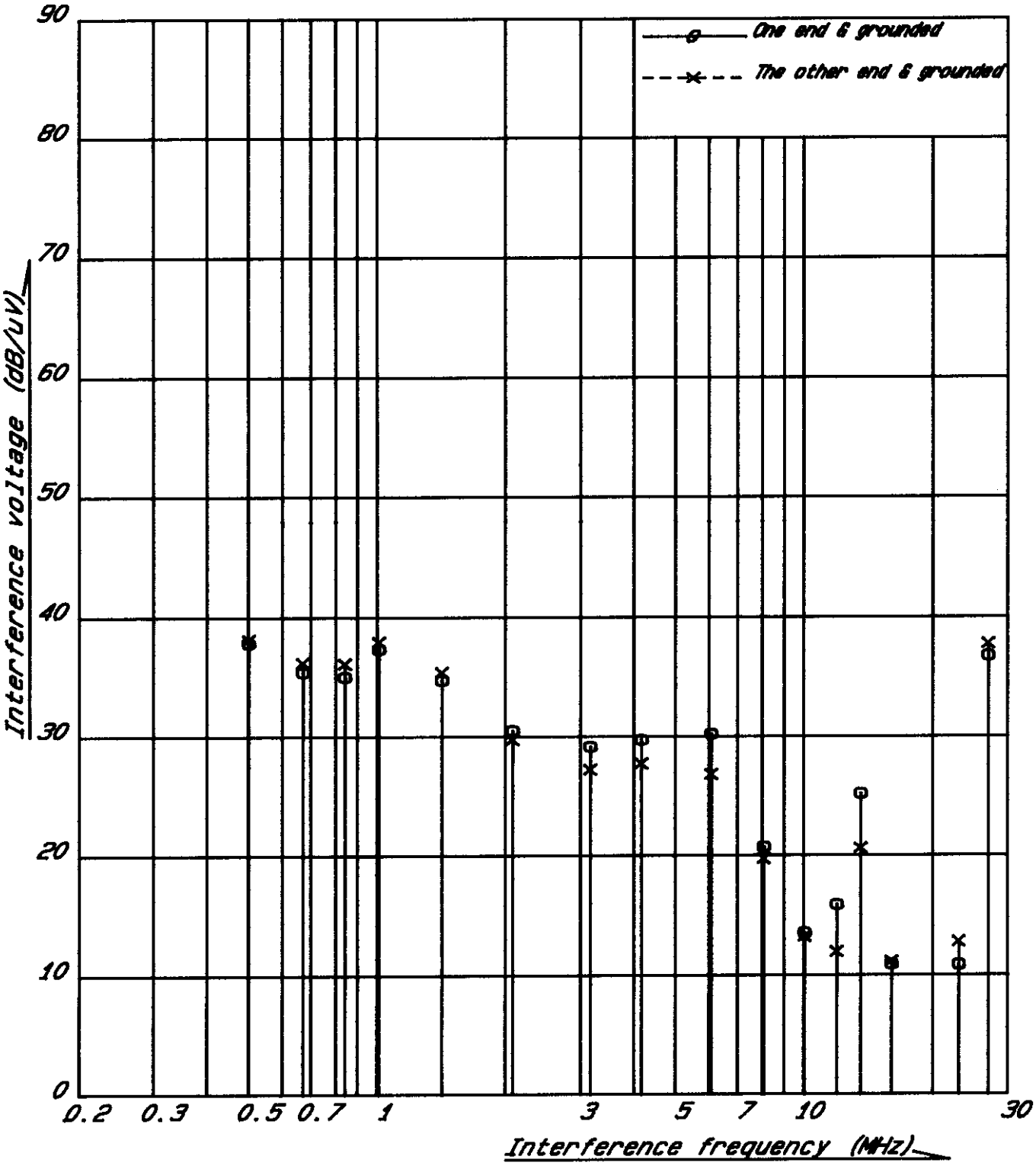
Note: 1. The symbol of "<" means "or less".

2. Sample calculation at 0.50 MHz:
Lisn Factor + Meter Reading = 0.2 + 37.6 = 37.8 (dB/uV)

CONDUCTED RADIO NOISE MEASUREMENTS

MODEL NO.: SLV-M20HF - Internal Large Antenna -

FCC ID : AK8SLVM20HF Function of EUT : TX



- Internal Small Antenna -

Frequency (MHz)	LISN Factor (dB)	Meter Reading(dB) One end & grounded	Meter Reading(dB) Other end & Grounded	Results (dB/uV) One end & Grounded	Results (dB/uV) Other end & Grounded
0.45	0.2	< 0.0	< 0.0	< 0.2	< 0.2
0.51	0.2	37.9	38.2	38.1	38.4
0.67	0.2	35.0	36.0	35.2	36.2
0.84	0.2	35.2	36.4	35.4	36.6
1.02	0.2	37.8	38.4	38.0	38.6
1.44	0.2	35.3	35.8	35.5	36.0
2.12	0.2	30.6	30.5	30.8	30.7
3.17	0.2	26.7	28.8	26.9	29.0
4.16	0.2	29.8	27.7	30.0	27.9
6.08	0.2	28.4	26.4	28.6	26.6
8.08	0.2	21.0	18.6	21.2	18.8
10.07	0.2	12.9	12.8	13.1	13.0
11.96	0.2	16.0	12.7	16.2	12.9
13.56	0.3	30.4	29.0	30.7	29.3
16.00	0.3	10.5	11.0	10.8	11.3
18.00	0.4	< 0.0	< 0.0	< 0.4	< 0.4
20.00	0.4	< 0.0	< 0.0	< 0.4	< 0.4
23.00	0.5	10.2	12.0	10.7	12.6
25.00	0.5	< 0.0	< 0.0	< 0.5	< 0.5
27.12	0.5	< 0.0	< 0.0	< 0.5	< 0.5
30.00	0.6	< 0.0	< 0.0	< 0.6	< 0.6

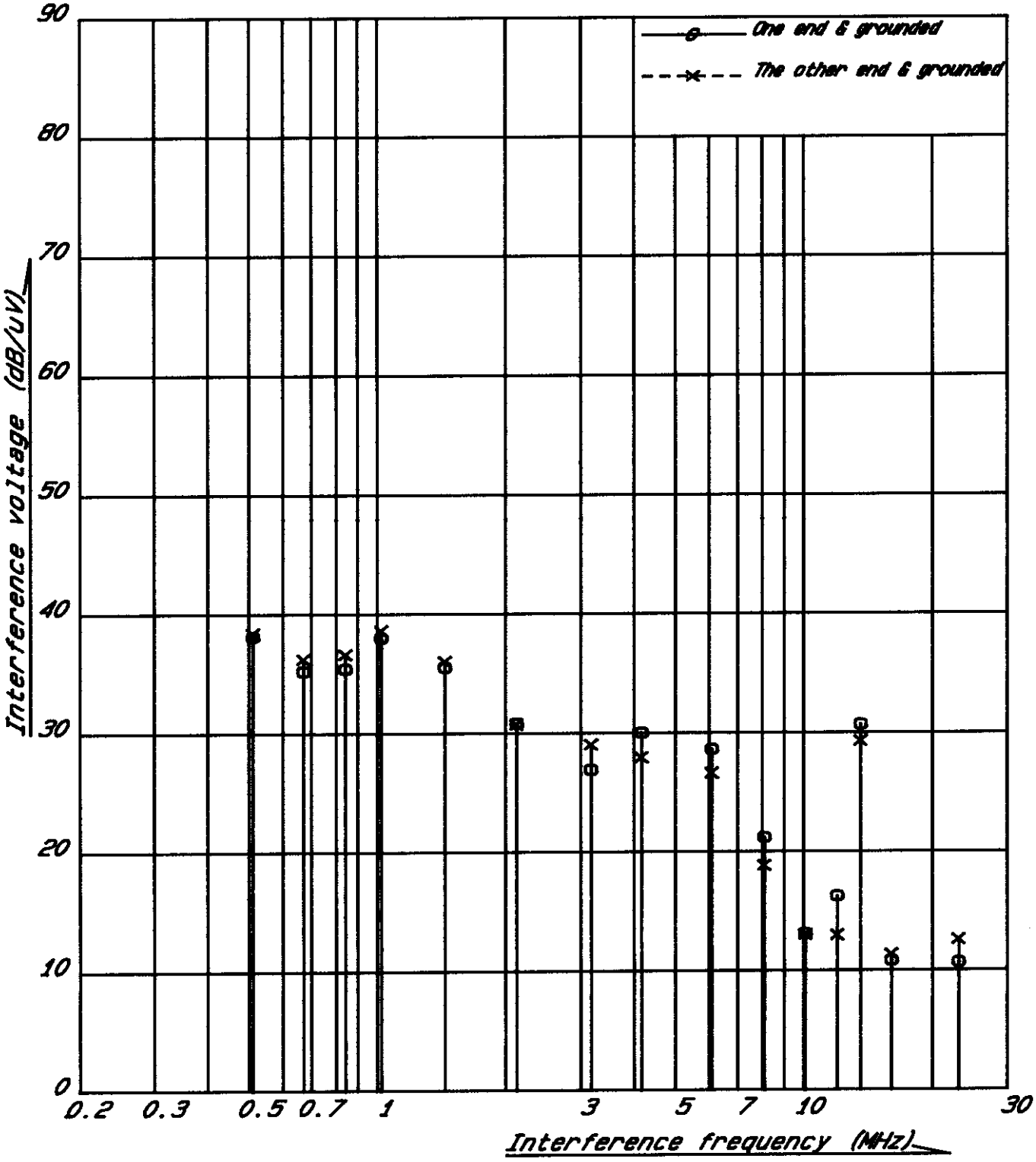
Note: 1. The symbol of "<" means "or less".

2. Sample calculation at 0.51 MHz:
Lisn Factor + Meter Reading = 0.2 + 37.9 = 38.1 (dB/uV)

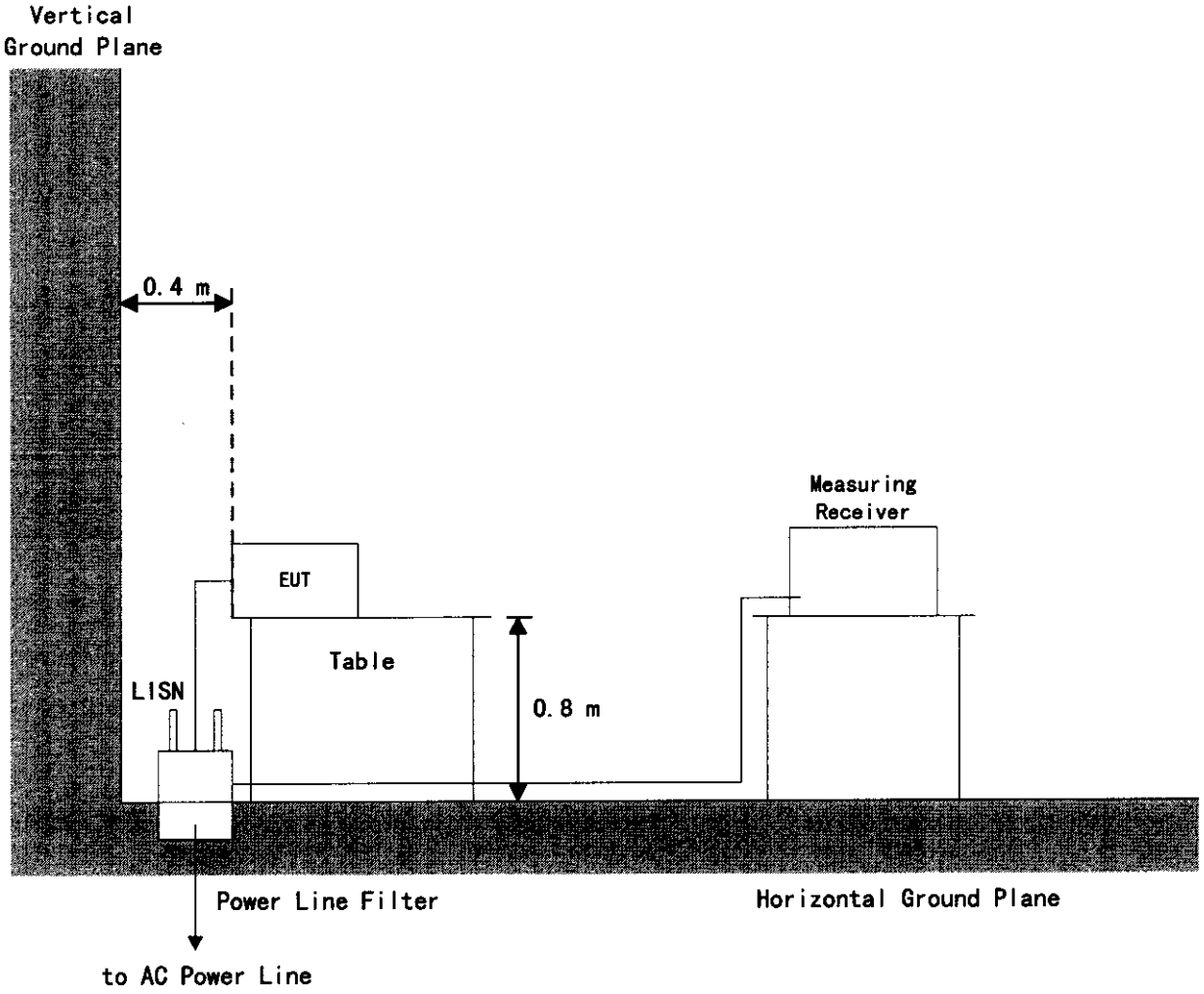
CONDUCTED RADIO NOISE MEASUREMENTS

MODEL NO.: SLV-M20HF - Internal Small Antenna -

FCC ID : AK8SLVM20HF Function of EUT : TX



MEASUREMENT SET-UP FOR LINE CONDUCTED RF VOLTAGE



5. Frequency Stability : [§15.225(c)]

Measurement Method Employed:

By using frequency counter with suitable RF amplifier, the carrier frequency of the transmitter under test was measured with a temperature variation of -20℃ to +50℃ at the normal supply voltage, and with a variation in the primary voltage from 85 % to 115 % the rated supply voltage at the temperature of +20℃.

Measurement Results :

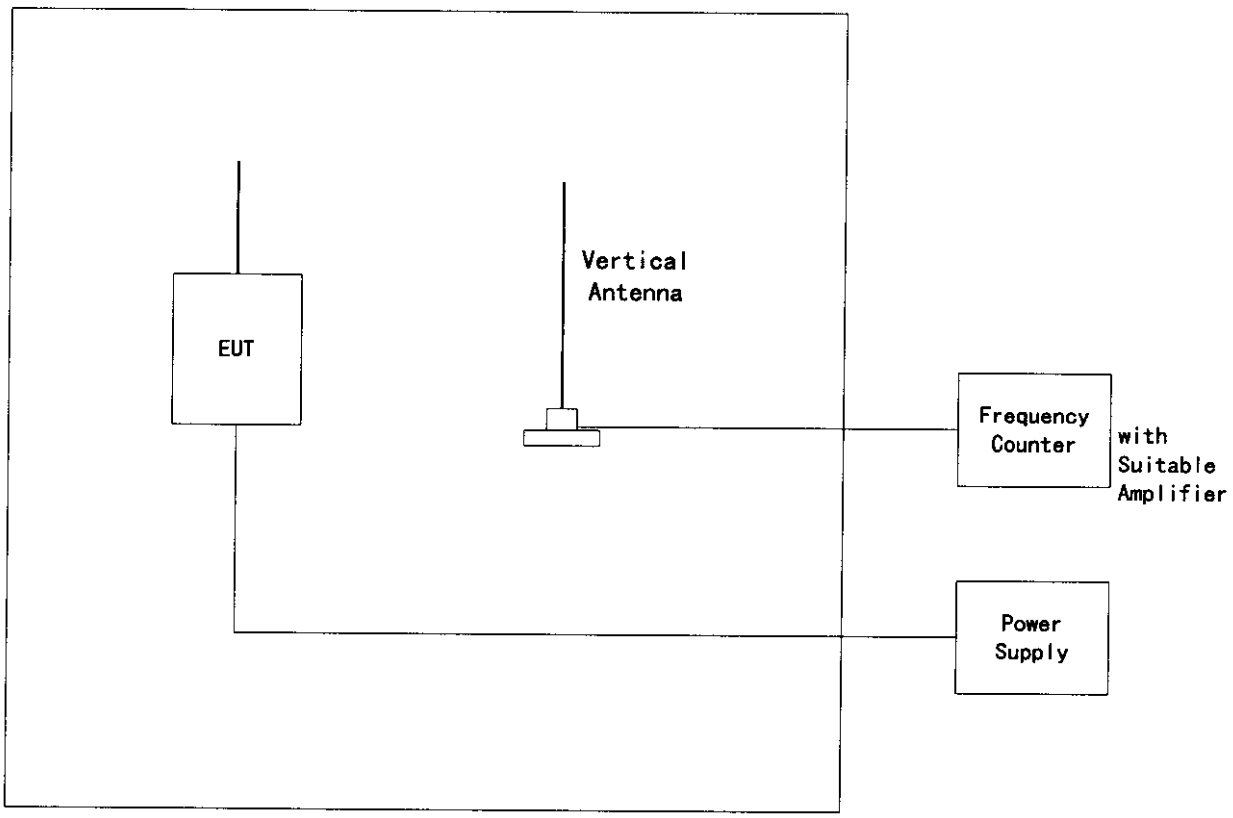
OPERATING FREQUENCY : 13.56 MHz

Ambient Temperature (℃)	Frequency tolerance with time elapse(%) 0 minute	2 minutes	5 minutes	10 minutes
-20	-0.00053	-0.00036	+0.00018	+0.00003
+50	+0.00025	+0.00026	+0.00030	+0.00034

Primary Supply Voltage (V)		Frequency tolerance with time elapse(%) 0 minute	2 minutes	5 minutes	10 minutes
at 20℃	102 (85%)	+0.00012	+0.00011	+0.00010	+0.00009
	120 (100%)	+0.00011	+0.00010	+0.00009	+0.00009
	138 (115%)	+0.00012	+0.00011	+0.00010	+0.00009

Specified Limit ±0.01%

MESUREMENT SET-UP FOR FREQUENCY STABILITY TOLERANCE



LIST OF MEASUREMENT EQUIPMENT

Equipment (Model No.)	Manufacturer	Date of Cal.
1. Field Strength Meter		
ESVP	Rohde & Schwarz	May 1997
ESH3	Rohde & Schwarz	May 1997
2. Spectrum Analyzer		
8566B	Hewlett Packard	April 1997
3. Tuned Dipole Antenna		
KBA-511	Kyoritsu Electrical Works	November 1997
KBA-611	Kyoritsu Electrical Works	November 1997
4. Vertical Antenna		
91972-2	Stoddard Aircraft Radio Co., Ltd.	-
5. LISN		
KNW-407	Kyoritsu	March 1997
6. Frequency Counter		
53131A	Hewlett Packard	June 1997
7. Oven		
-	Ohnishi Co., Ltd.	July 1997
8. Loop Antenna		
HFH2-Z2	Rohde & Schwarz	November 1997

JAPAN QUALITY ASSURANCE ORGANIZATION
21-25, KINUTA 1-CHOME, SETAGAYA-KU, TOKYO 157 JAPAN
PHONE (03) 3416-0111, TELEX 242-2531 JQA J FAX (03) 3416-9691

FCC ID : AK8SLVM20HF

TEST REPORT
FOR TV INTERFACE DEVICES UNDER FCC PART 15

Date : March 27, 1998
Issued at : TOKYO, JAPAN

JQA APPLICATION NO. : 80-70826

APPLICANT : Sony Corporation
7-35, Kitashinagawa 6-chome, Shinagawa-ku, Tokyo, 141 JAPAN

MANUFACTURER : Sony Corporation
7-35, Kitashinagawa 6-chome, Shinagawa-ku, Tokyo, 141 JAPAN

TYPE OF EQUIPMENT : Video Cassette Recorder

REGULATION APPLIED : FCC Rules and Regulations Part 15 Subpart B (1989)

MEASUREMENT PROCEDURES USED : ANSI C63.4-1992

PLACE OF MEASUREMENT : JQA EMC Engineering Department (Anechoic Chamber No.3)

Test Facility : This test site and conducted measurement facility have been fully described in report dated May 14, 1996 submitted to FCC office, and accepted in a letter dated June 7, 1996 (31040/SIT).

The test results are only applicable to the test item as described below.
This report should not be reproduced, except in full, without the approval of the JQA EMC Engineering Department.

T. Kato

Tetsuo Kato, Manager
Testing Division
EMC Engineering Department

Model No. : SLV-M20HF
Serial No. : None

Table of Contents

Model No. : SLV-M20HF
Serial No. : None

1. Description of EUT

1.1)	Type of Device	: TV Interface Device
1.2)	Equipment Authorization	: Certification
1.3)	FCC ID	: AK8SLVM20HF
1.4)	Brand Name	: SONY
1.5)	Model No.	: SLV-M20HF
1.6)	Serial No.	: None
1.7)	Date of Manufacture	: -
1.8)	Highest Frequency Used	: 67.25 MHz
1.9)	Rating Power Supply	: AC 120 V, 60 Hz
1.10)	RF Output Channels	: Channel No.3 and Channel No.4
1.11)	RF Output Terminal	: F-type Connector / 75 ohms (Unbalanced)

2. Test Condition of EUT

2.1)	Operating Condition	: Playing Mode / Recording Mode
2.2)	Grounding	: None
2.3)	Warm-up Time	: 5 minutes
2.4)	Power Supply	: AC 120 V, 60 Hz

Model No. : SLV-M20HF
Serial No. : None

3. All Terminals of EUT

3.1) Input Terminals

	Description of Terminal	Type of Connector	Number of Terminals
Rear Side :	RF Terminal	F-type Connector	1
	Audio Terminal	Phono Jack	2
	Video Terminal	Phono Jack	1
	CONTROL S Terminal	Mini Jack	1
	CPD Terminal	Mini Jack	1
Front Side :	Audio Terminal	Phono Jack	2
	Video Terminal	Phono Jack	1

Note: Each input terminals of EUT were terminated with the terminator of specified impedances.

3.2) Output Terminals

	Description of Terminal	Type of Connector	Number of Terminals
Rear Side :	RF Terminal	F-type Connector	1
	Audio Terminal	Phono Jack	2
	Video Terminal	Phono Jack	1
	CONTROL S Terminal	Stereo Mini Jack	1
	G-Link Terminal	Mini Jack	1

Front Side : None

Note: Each output terminals of EUT were connected to the cable terminated with the specified impedances.

Model No. : SLV-M20HF
Serial No. : None

4. Type of Connected Cables

Description of Cable	Shielded	Length	Number of Cables	Supplied
RF Cable	Yes	1.5 m	1	Yes
Audio/video Cable	Yes	1.5 m	1	Yes
Cable Mouse	Yes	1.8 m	1	Yes

Notes: 1) Each input terminals of EUT were terminated with the terminator of specified impedances.
2) Each output terminals of EUT were connected to the cable terminated with the specified impedances.

5. Testing Signal Sources

5.1) Internal Modulation Sources : NTSC TV Signal Recording Tape

5.2) Video Modulation Sources : VITS (1 Vp-p and 5 Vp-p)

5.3) RF Modulation Sources : NTSC Colorbar (70 dB/uV at 193.25 MHz)

6. Configuration of EUT

Model No. : SLV-M20HF
Serial No. : None

7. Summary of Measurement Result

The EUT complied with the requirement of FCC Rules and Regulations Part 15 Subpart B (1989) as detailed from page 7 to page 48.

§15.107(a) AC Powerline Conducted Emissions Measurement	: PASSED
Margins with respect to the Limit	: 7.6 dB at 0.61 MHz
§15.109(a) Radiated Emissions Measurement	: PASSED
Margins with respect to the Limit	: 0.4 dB at 177.2 MHz
§15.115(b)(1)(ii) Output Signal Level Measurement	: PASSED
Margins with respect to the Limit	: 2.2 dB at 61.25 MHz
§15.115(b)(2)(ii) Spurious Conducted Level Measurement	: PASSED
Margins with respect to the Limit	: 10.5 dB at 53.1 MHz
§15.115(c)(1)(ii) Antenna Transfer Switch Measurement	: PASSED
Margins with respect to the Limit	: 0.4 dB at 61.22 MHz

I HEREBY STATE THAT:
The measurements shown in the reports 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 qualification of all persons taking them.

Testing Supervisor : Toshiyuki Itoi

Toshiyuki Itoi, Deputy Manager
Testing Division
EMC Engineering Department

Model No. : SLV-M20HF
Serial No. : None

Date : March 25, 1998
Temp. : 24 °C; Humi. : 42 %

8. §15.107(a) AC Powerline Conducted Emissions Measurement

Tested by : K. Hayashi

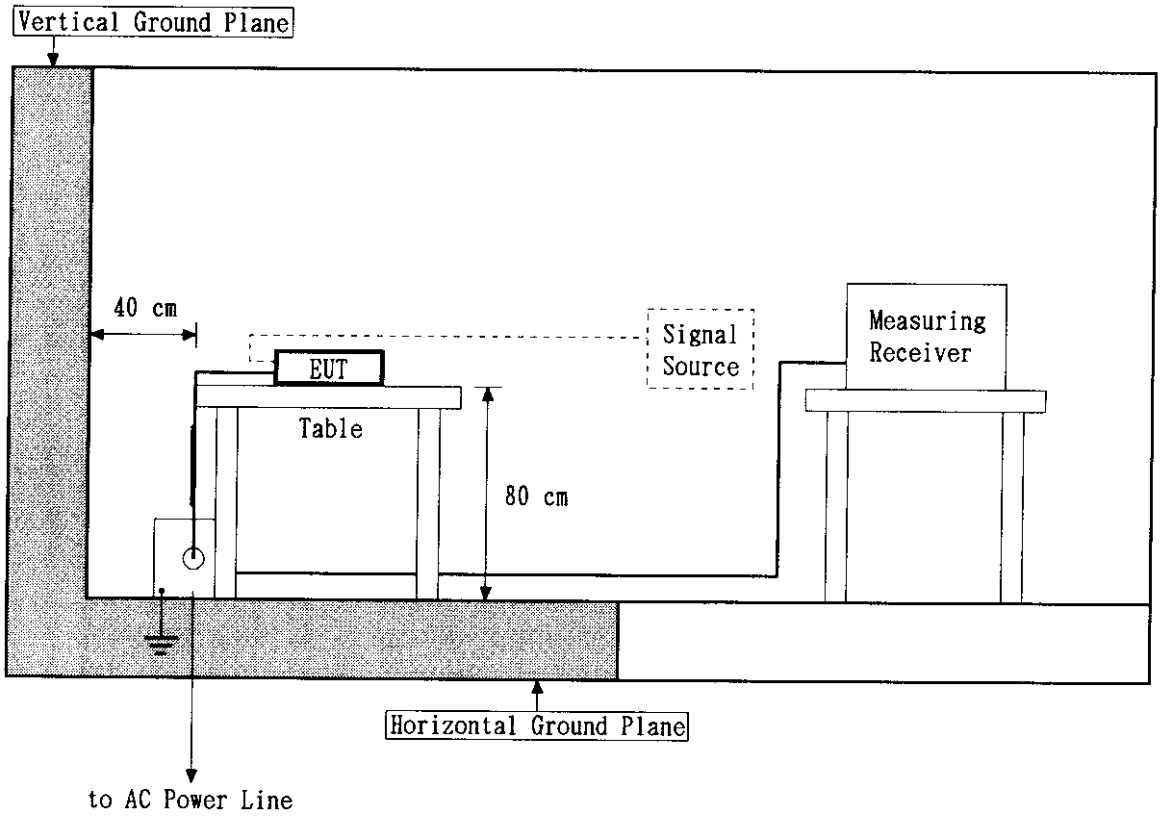
Kazuya Hayashi, Engineer
Testing Division
EMC Engineering Department

Model No. : SLV-M20HF
Serial No. : None

§15.107(a) AC Powerline Conducted Emissions Measurement

Configuration of EUT

Side View



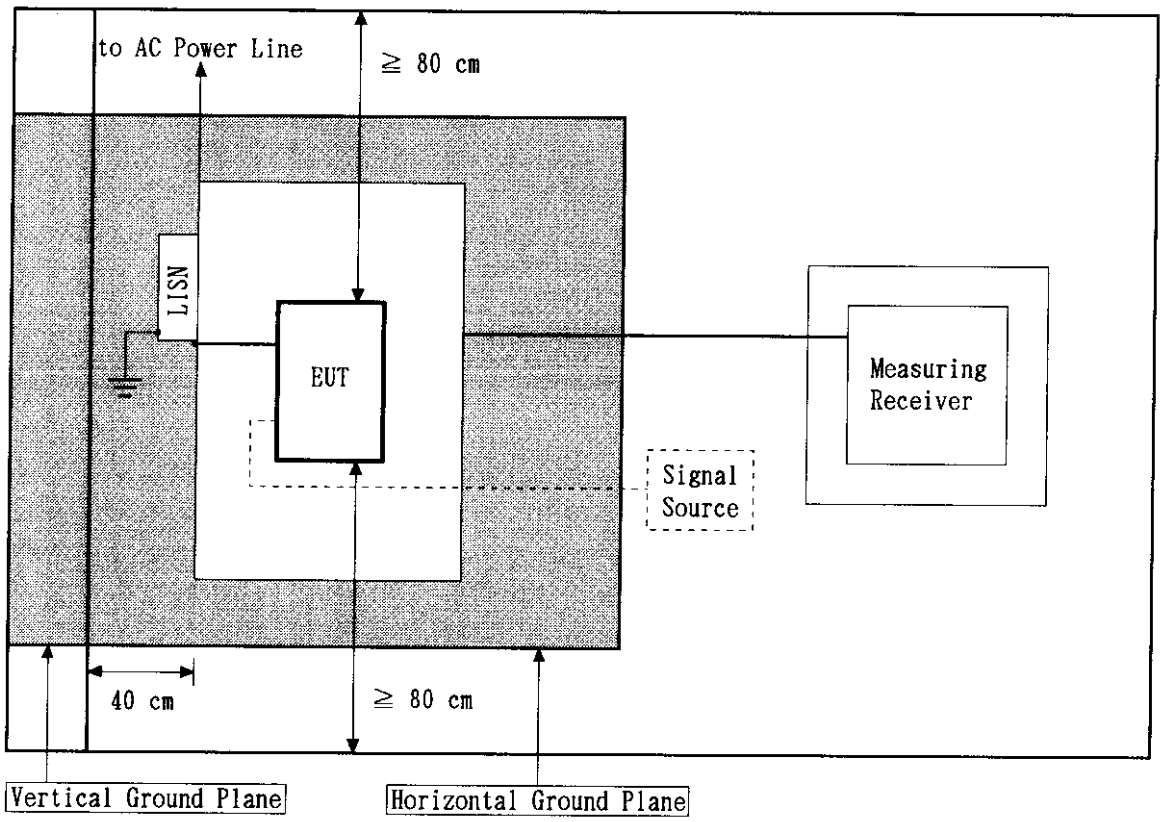
Note: The same configuration of cables and terminators which were connected to VCR was applied to all applicable measurements, shown as photograph in page 19 and 20.

Model No. : SLV-M20HF
Serial No. : None

§15.107(a) AC Powerline Conducted Emissions Measurement

Configuration of EUT

Top View



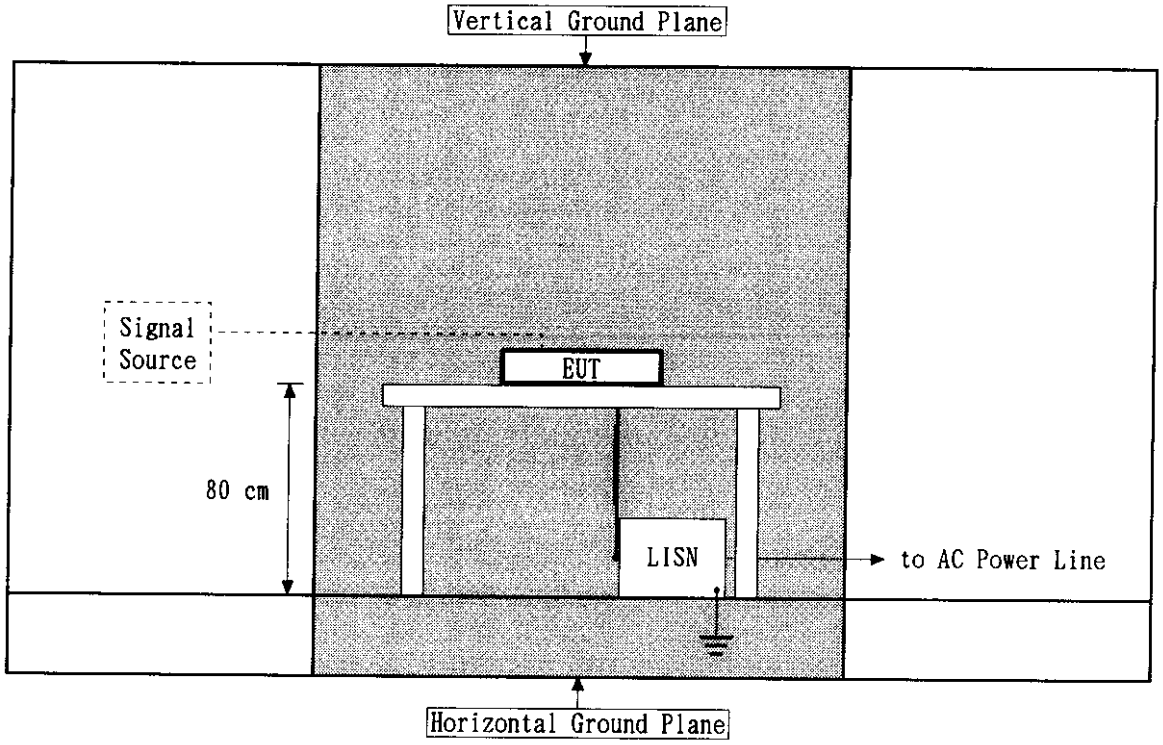
Note: The same configuration of cables and terminators which were connected to VCR was applied to all applicable measurements, shown as photograph in page 19 and 20.

Model No. : SLV-M20HF
Serial No. : None

§15.107(a) AC Powerline Conducted Emissions Measurement

Configuration of EUT

Front View



Note: The same configuration of cables and terminators which were connected to VCR was applied to all applicable measurements, shown as photograph in page 19 and 20.

Model No. : SLV-M20HF
Serial No. : None

§15.107(a) AC Powerline Conducted Emissions Measurement

Testing Signal Sources : Internal Modulation Sources (NTSC TV Signal Recording Tape)
Operating Condition : Playing Mode

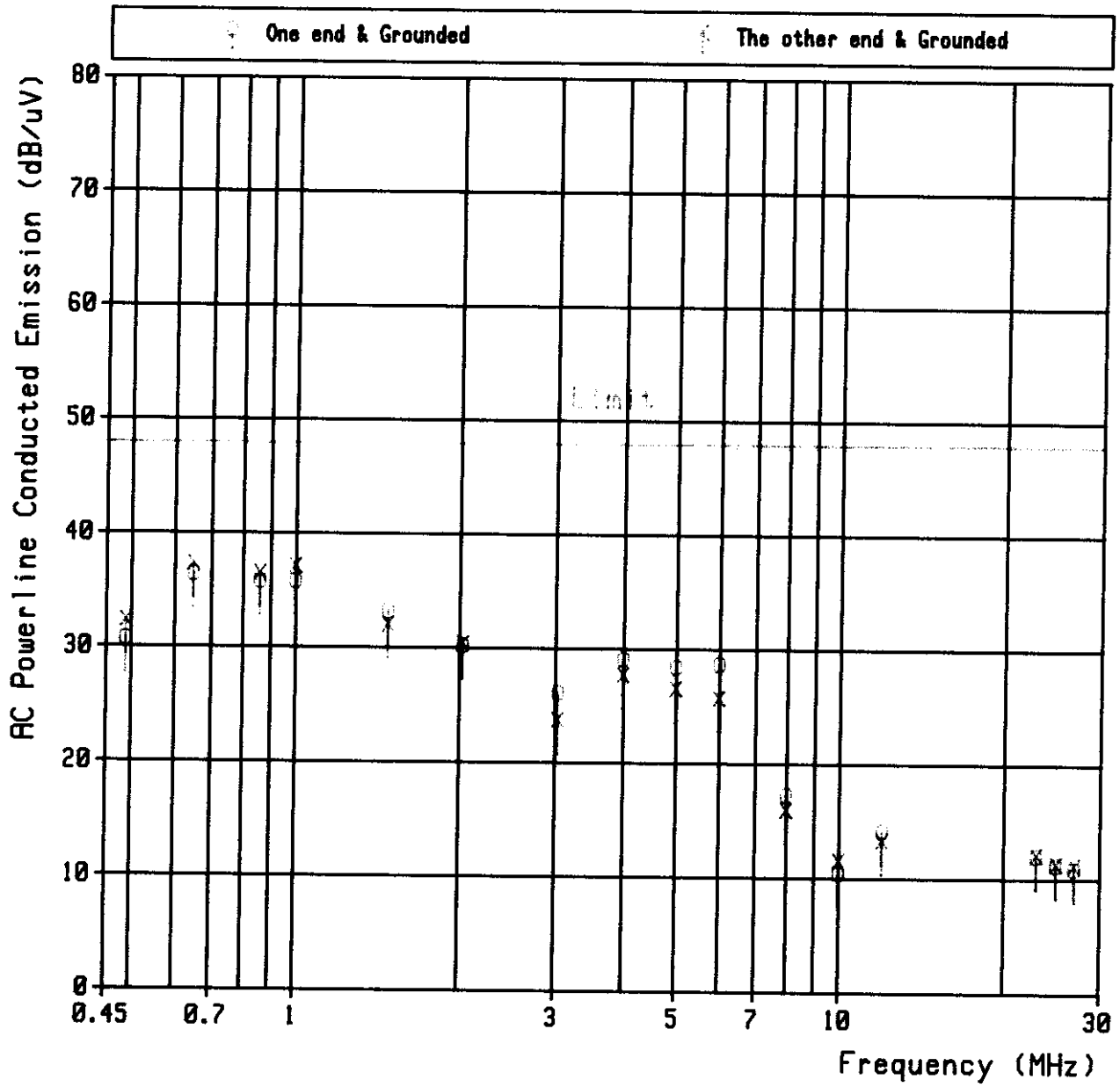
Frequency (MHz)	Correction Factor (dB)	Meter Reading (dB/uV)		Result (dB/uV)		Limit (dB/uV)
		V-A	V-B	V-A	V-B	
0.45	0.2	< 10.0	< 10.0	< 10.2	< 10.2	48.0
0.49	0.2	30.6	32.2	30.8	32.4	48.0
0.65	0.2	36.3	37.2	36.5	37.4	48.0
0.86	0.2	35.7	36.4	35.9	36.6	48.0
1.00	0.2	35.7	37.0	35.9	37.2	48.0
1.48	0.2	33.1	31.9	33.3	32.1	48.0
2.03	0.2	30.1	30.3	30.3	30.5	48.0
3.04	0.2	26.0	23.6	26.2	23.8	48.0
4.00	0.2	29.0	27.6	29.2	27.8	48.0
5.00	0.2	28.3	26.4	28.5	26.6	48.0
6.00	0.2	28.6	25.6	28.8	25.8	48.0
8.00	0.2	17.1	15.8	17.3	16.0	48.0
10.00	0.2	10.3	11.4	10.5	11.6	48.0
12.00	0.2	14.0	13.2	14.2	13.4	48.0
14.00	0.3	< 10.0	< 10.0	< 10.3	< 10.3	48.0
16.00	0.3	< 10.0	< 10.0	< 10.3	< 10.3	48.0
18.00	0.4	< 10.0	< 10.0	< 10.4	< 10.4	48.0
20.00	0.4	< 10.0	< 10.0	< 10.4	< 10.4	48.0
23.00	0.5	11.6	11.7	12.1	12.2	48.0
25.00	0.5	10.8	10.9	11.3	11.4	48.0
27.00	0.5	10.5	10.8	11.0	11.3	48.0
30.00	0.6	< 10.0	< 10.0	< 10.6	< 10.6	48.0

Notes: 1) The spectrum was checked from 0.45 MHz to 30 MHz.
2) V-A : One end & Grounded ; V-B : The other end & Grounded
3) The symbol of '<' means 'or less'.
4) Correction Factor includes a LISN factor and a cable (2.0 m) loss.
5) A sample calculation was made at 0.65 MHz.
Correction Factor + Meter Reading = 0.2 + 37.2 = 37.4 dB/uV

Model No. : SLV-M20HF
Serial No. : None

§15.107(a) AC Powerline Conducted Emissions Measurement

Testing Signal Sources : Internal Modulation Sources (NTSC TV Signal Recording Tape)
Operating Condition : Playing Mode



Model No. : SLV-M20HF
Serial No. : None

§15.107(a) AC Powerline Conducted Emissions Measurement

Testing Signal Sources : Video Modulation Sources (VITS : 1 Vp-p and 5 Vp-p)
Operating Condition : Recording Mode

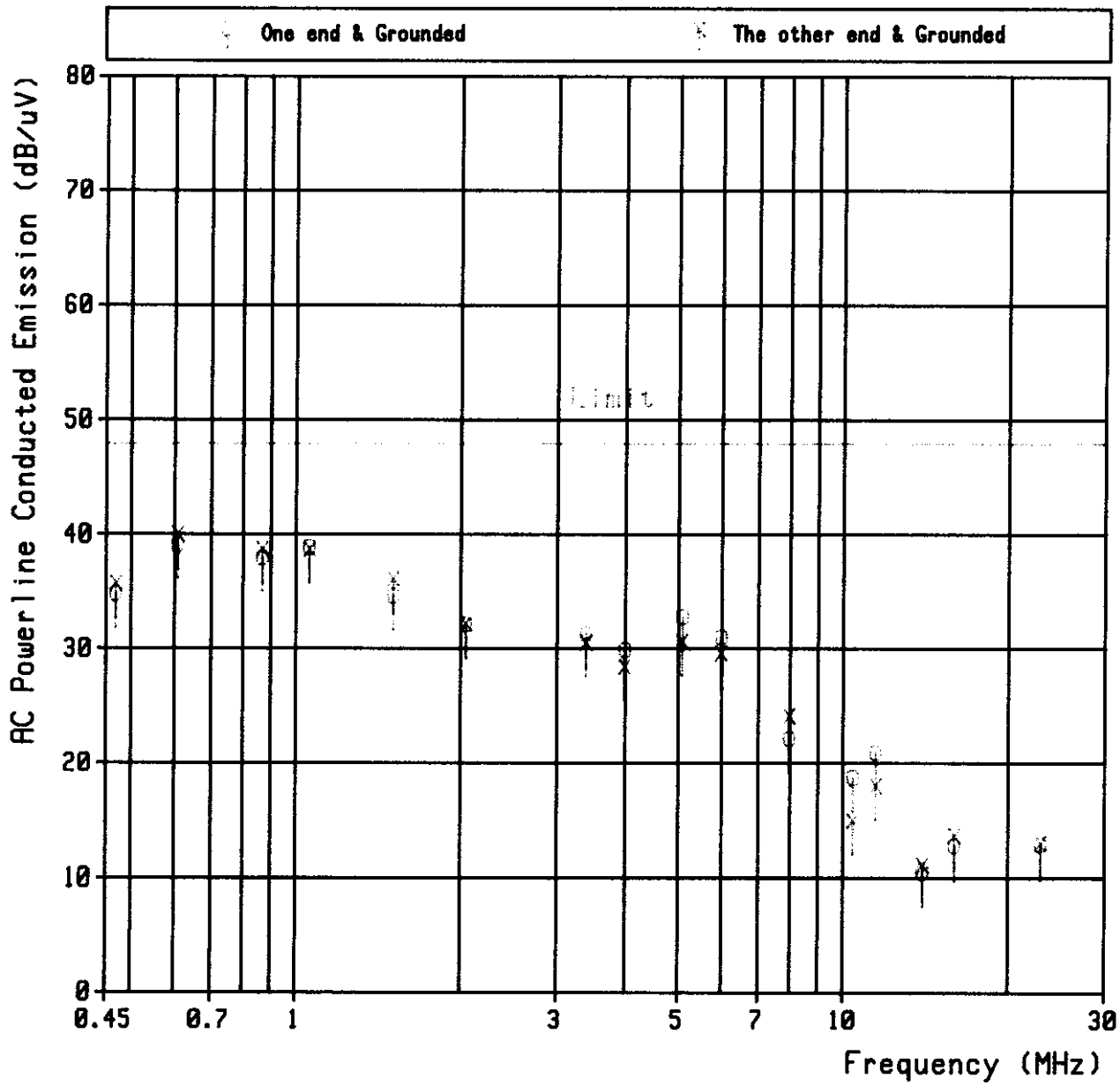
Frequency (MHz)	Correction Factor (dB)	Meter Reading (dB/uV)		Result (dB/uV)		Limit (dB/uV)
		V-A	V-B	V-A	V-B	
0.45	0.2	< 10.0	< 10.0	< 10.2	< 10.2	48.0
0.47	0.2	34.7	35.6	34.9	35.8	48.0
0.61	0.2	39.0	39.9	39.2	40.1	48.0
0.87	0.2	37.9	38.6	38.1	38.8	48.0
1.06	0.2	38.8	38.6	39.0	38.8	48.0
1.51	0.2	34.5	36.0	34.7	36.2	48.0
2.05	0.2	32.0	32.1	32.2	32.3	48.0
3.40	0.2	31.2	30.4	31.4	30.6	48.0
4.00	0.2	29.8	28.3	30.0	28.5	48.0
5.10	0.2	32.7	30.5	32.9	30.7	48.0
6.00	0.2	30.9	29.5	31.1	29.7	48.0
8.00	0.2	22.0	24.0	22.2	24.2	48.0
10.45	0.2	18.6	14.8	18.8	15.0	48.0
11.51	0.2	20.8	17.9	21.0	18.1	48.0
14.00	0.3	10.3	10.8	10.6	11.1	48.0
16.00	0.3	12.5	13.4	12.8	13.7	48.0
18.00	0.4	< 10.0	< 10.0	< 10.4	< 10.4	48.0
20.00	0.4	< 10.0	< 10.0	< 10.4	< 10.4	48.0
23.00	0.5	12.4	12.5	12.9	13.0	48.0
25.00	0.5	< 10.0	< 10.0	< 10.5	< 10.5	48.0
27.00	0.5	< 10.0	< 10.0	< 10.5	< 10.5	48.0
30.00	0.6	< 10.0	< 10.0	< 10.6	< 10.6	48.0

Notes: 1) The spectrum was checked from 0.45 MHz to 30 MHz.
2) V-A : One end & Grounded ; V-B : The other end & Grounded
3) The symbol of '<' means 'or less'.
4) Correction Factor includes a LISN factor and a cable (2.0 m) loss.
5) A sample calculation was made at 0.61 MHz.
Correction Factor + Meter Reading = 0.2 + 39.9 = 40.1 dB/uV

Model No. : SLV-M20HF
Serial No. : None

§15.107(a) AC Powerline Conducted Emissions Measurement

Testing Signal Sources : Video Modulation Sources (VITS : 1 Vp-p and 5 Vp-p)
Operating Condition : Recording Mode



Model No. : SLV-M20HF
Serial No. : None

§15.107(a) AC Powerline Conducted Emissions Measurement

Testing Signal Sources : RF Modulation Sources (NTSC Colorbar : 70 dB/uV at 193.25 MHz)
Operating Condition : Recording Mode

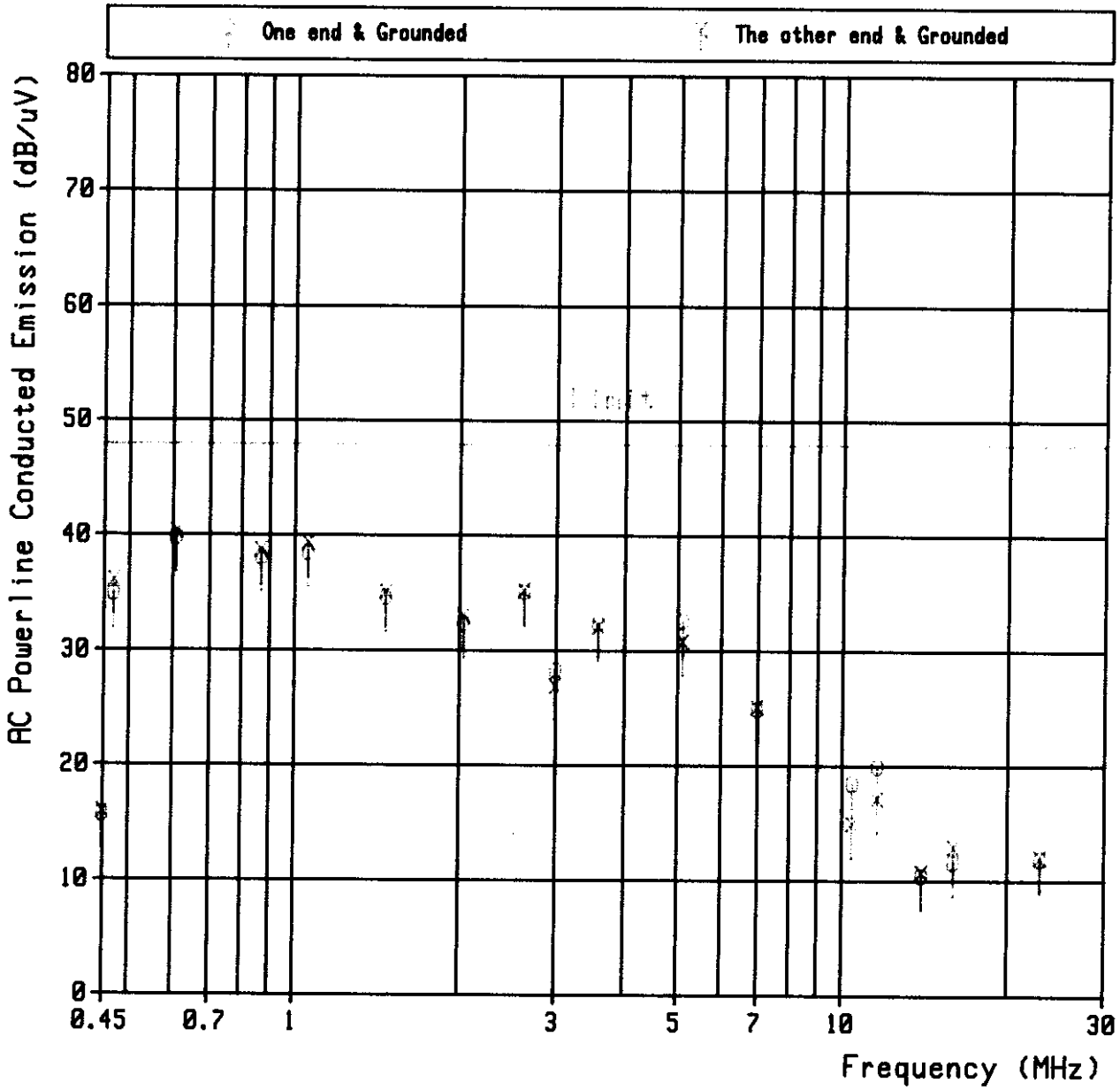
Frequency (MHz)	Correction Factor (dB)	Meter Reading (dB/uV)		Result (dB/uV)		Limit (dB/uV)
		V-A	V-B	V-A	V-B	
0.45	0.2	15.6	15.8	15.8	16.0	48.0
0.47	0.2	34.8	36.0	35.0	36.2	48.0
0.61	0.2	39.7	40.2	39.9	40.4	48.0
0.87	0.2	38.0	38.6	38.2	38.8	48.0
1.06	0.2	38.4	39.2	38.6	39.4	48.0
1.47	0.2	34.5	35.0	34.7	35.2	48.0
2.04	0.2	32.2	32.9	32.4	33.1	48.0
2.63	0.2	35.0	35.1	35.2	35.3	48.0
3.00	0.2	28.2	26.8	28.4	27.0	48.0
3.59	0.2	32.3	32.0	32.5	32.2	48.0
5.12	0.2	32.5	30.7	32.7	30.9	48.0
7.00	0.2	24.8	25.0	25.0	25.2	48.0
10.45	0.2	18.3	14.8	18.5	15.0	48.0
11.61	0.2	19.8	17.0	20.0	17.2	48.0
14.00	0.3	10.2	10.5	10.5	10.8	48.0
16.00	0.3	11.4	12.7	11.7	13.0	48.0
18.00	0.4	< 10.0	< 10.0	< 10.4	< 10.4	48.0
20.00	0.4	< 10.0	< 10.0	< 10.4	< 10.4	48.0
23.00	0.5	11.5	11.6	12.0	12.1	48.0
25.00	0.5	< 10.0	< 10.0	< 10.5	< 10.5	48.0
27.00	0.5	< 10.0	< 10.0	< 10.5	< 10.5	48.0
30.00	0.6	< 10.0	< 10.0	< 10.6	< 10.6	48.0

Notes: 1) The spectrum was checked from 0.45 MHz to 30 MHz.
2) V-A : One end & Grounded ; V-B : The other end & Grounded
3) The symbol of '<' means 'or less'.
4) Correction Factor includes a LISN factor and a cable (2.0 m) loss.
5) A sample calculation was made at 0.61 MHz.
Correction Factor + Meter Reading = 0.2 + 40.2 = 40.4 dB/uV

Model No. : SLV-M20HF
Serial No. : None

§15.107(a) AC Powerline Conducted Emissions Measurement

Testing Signal Sources : RF Modulation Sources (NTSC Colorbar : 70 dB/uV at 193.25 MHz)
Operating Condition : Recording Mode



Model No. : SLV-M20HF
Serial No. : None

Date : March 17, 1998
Temp. : 24 °C; Humi. : 42 %

9. §15.109(a) Radiated Emissions Measurement

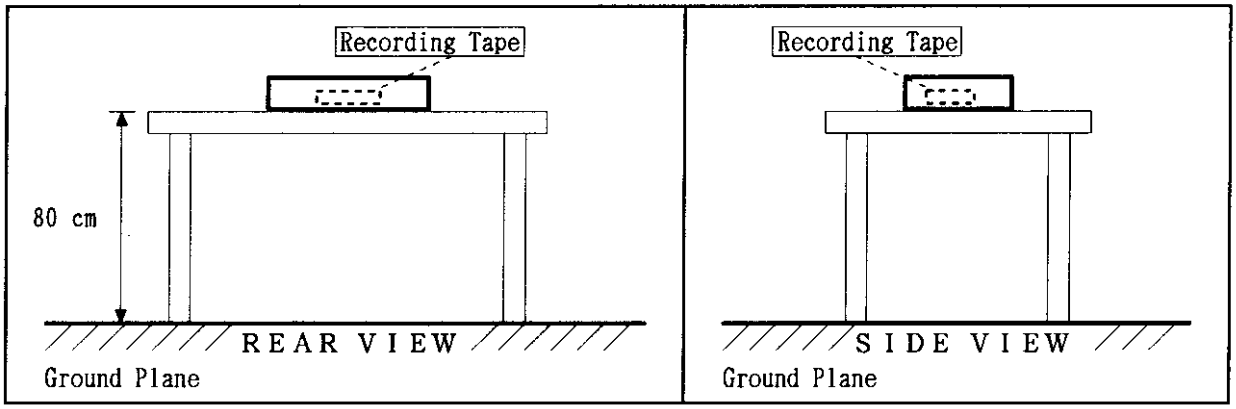
Tested by : Toshiyuki Itoi

Toshiyuki Itoi, Deputy Manager
Testing Division
EMC Engineering Department

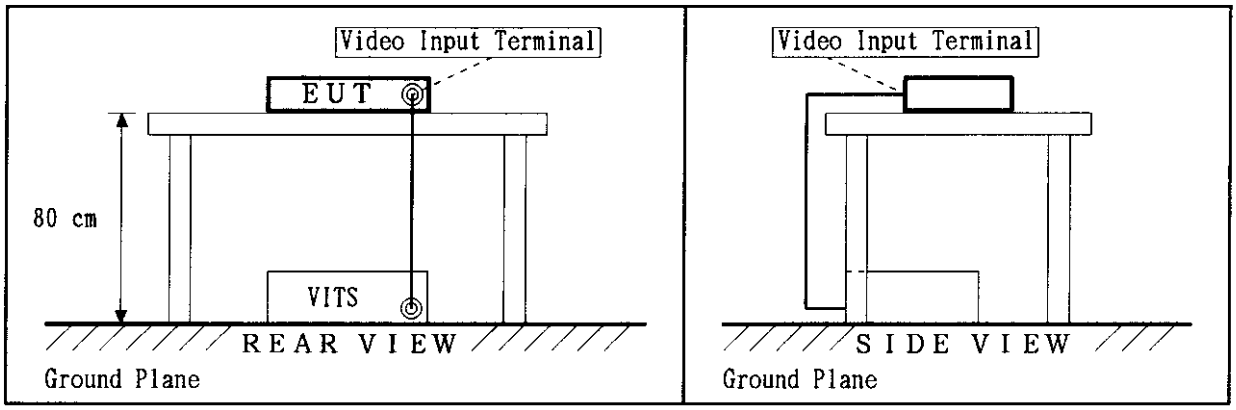
Model No. : SLV-M20HF
Serial No. : None

Configuration of Testing Signal Sources

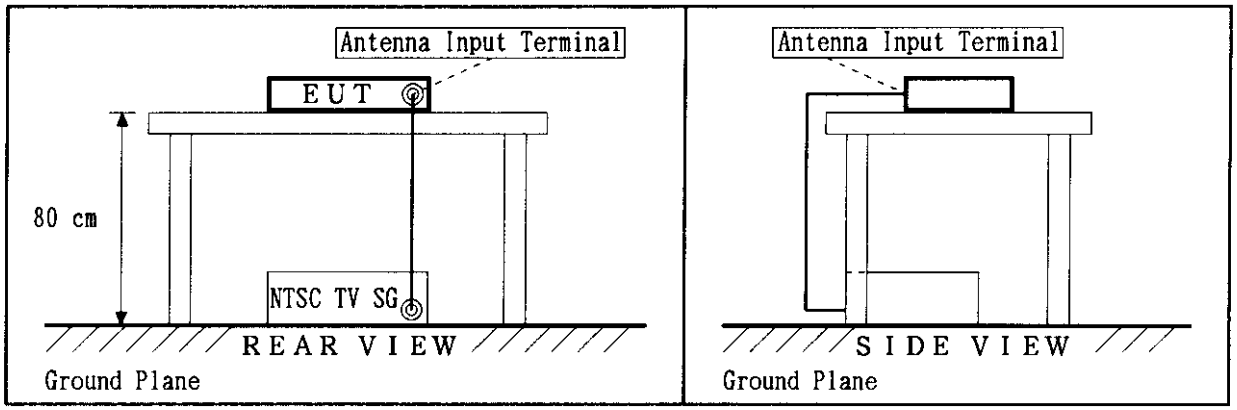
Testing Signal Sources : Internal Modulation Sources (NTSC TV Signal Recording Tape)



Testing Signal Sources : Video Modulation Sources (VITS : 1 Vp-p and 5 Vp-p)



Testing Signal Sources : RF Modulation Sources (NTSC Colorbar : 70 dB/uV at 193.25 MHz)



Model No. : SLV-M20HF
Serial No. : None

§15.109(a) Radiated Emissions Measurement

Testing Signal Sources : Internal Modulation Sources (NTSC TV Signal Recording Tape)
Operating Condition : Playing Mode

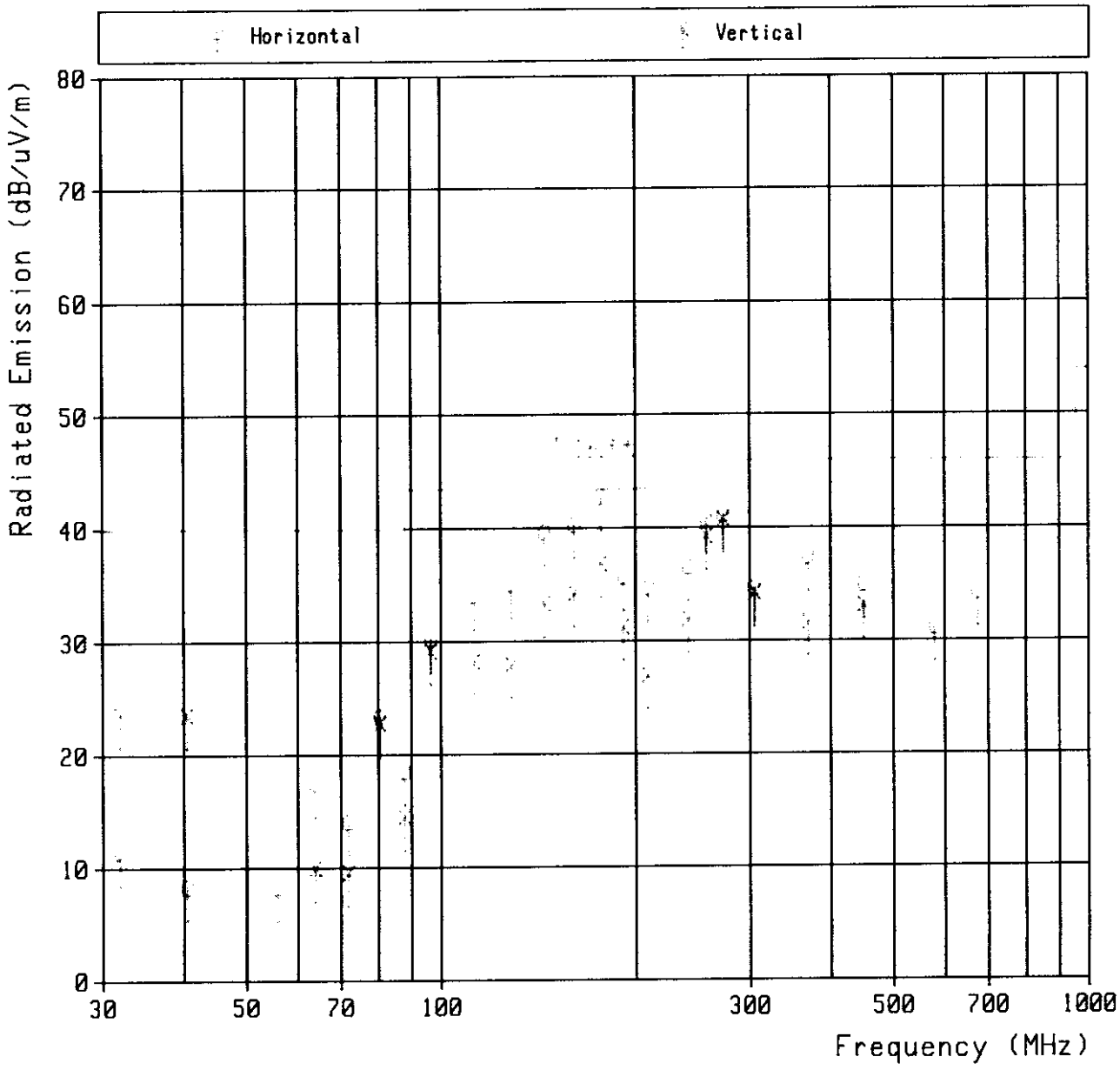
Frequency (MHz)	Correction Factor (dB)	Meter Reading (dB/uV)		Result (dB/uV/m)		Limit (dB/uV/m)
		Horizontal	Vertical	Horizontal	Vertical	
32.0	0.1	11.4	23.6	11.5	23.7	40.0
40.6	2.3	6.1	21.3	8.4	23.6	40.0
56.0	5.3	3.0	< 0.0	8.3	< 5.3	40.0
64.0	6.5	11.0	3.5	17.5	10.0	40.0
72.0	7.7	6.4	1.9	14.1	9.6	40.0
80.6	8.8	14.6	14.0	23.4	22.8	40.0
88.0	9.6	8.9	4.9	18.5	14.5	40.0
96.7	10.6	19.7	18.6	30.3	29.2	43.5
112.8	12.1	22.0	16.2	34.1	28.3	43.5
128.9	13.5	21.6	14.5	35.1	28.0	43.5
145.0	14.7	25.0	18.7	39.7	33.4	43.5
161.2	15.8	24.5	18.5	40.3	34.3	43.5
177.2	16.8	26.0	20.1	42.8	36.9	43.5
192.0	17.6	18.1	13.7	35.7	31.3	43.5
209.5	18.5	16.2	8.5	34.7	27.0	43.5
241.7	20.1	16.5	11.9	36.6	32.0	46.0
257.8	20.8	20.0	18.5	40.8	39.3	46.0
273.9	21.4	19.8	19.4	41.2	40.8	46.0
306.0	22.6	12.1	11.7	34.7	34.3	46.0
370.6	24.8	12.6	6.9	37.4	31.7	46.0
451.2	27.0	8.0	6.2	35.0	33.2	46.0
580.1	30.1	1.1	< 0.0	31.2	< 30.1	46.0
676.7	32.1	2.2	< 0.0	34.3	< 32.1	46.0
800.0	34.4	< 0.0	< 0.0	< 34.4	< 34.4	46.0
1000.0	37.4	< 0.0	< 0.0	< 37.4	< 37.4	54.0

Notes: 1) Measured Distance : 3.0 m
2) The spectrum was checked from 30 MHz to 1000 MHz.
3) The symbol of '<' means 'or less'.
4) Correction Factor includes an antenna factor and a cable (14.0 m) loss.
5) A sample calculation was made at 177.2 MHz.
Correction Factor + Meter Reading = 16.8 + 26.0 = 42.8 dB/uV/m

Model No. : SLV-M20HF
Serial No. : None

§15.109(a) Radiated Emissions Measurement

Testing Signal Sources : Internal Modulation Sources (NTSC TV Signal Recording Tape)
Operating Condition : Playing Mode



Model No. : SLV-M20HF
Serial No. : None

§15.109(a) Radiated Emissions Measurement

Testing Signal Sources : Video Modulation Sources (VITS : 1 Vp-p and 5 Vp-p)
Operating Condition : Recording Mode

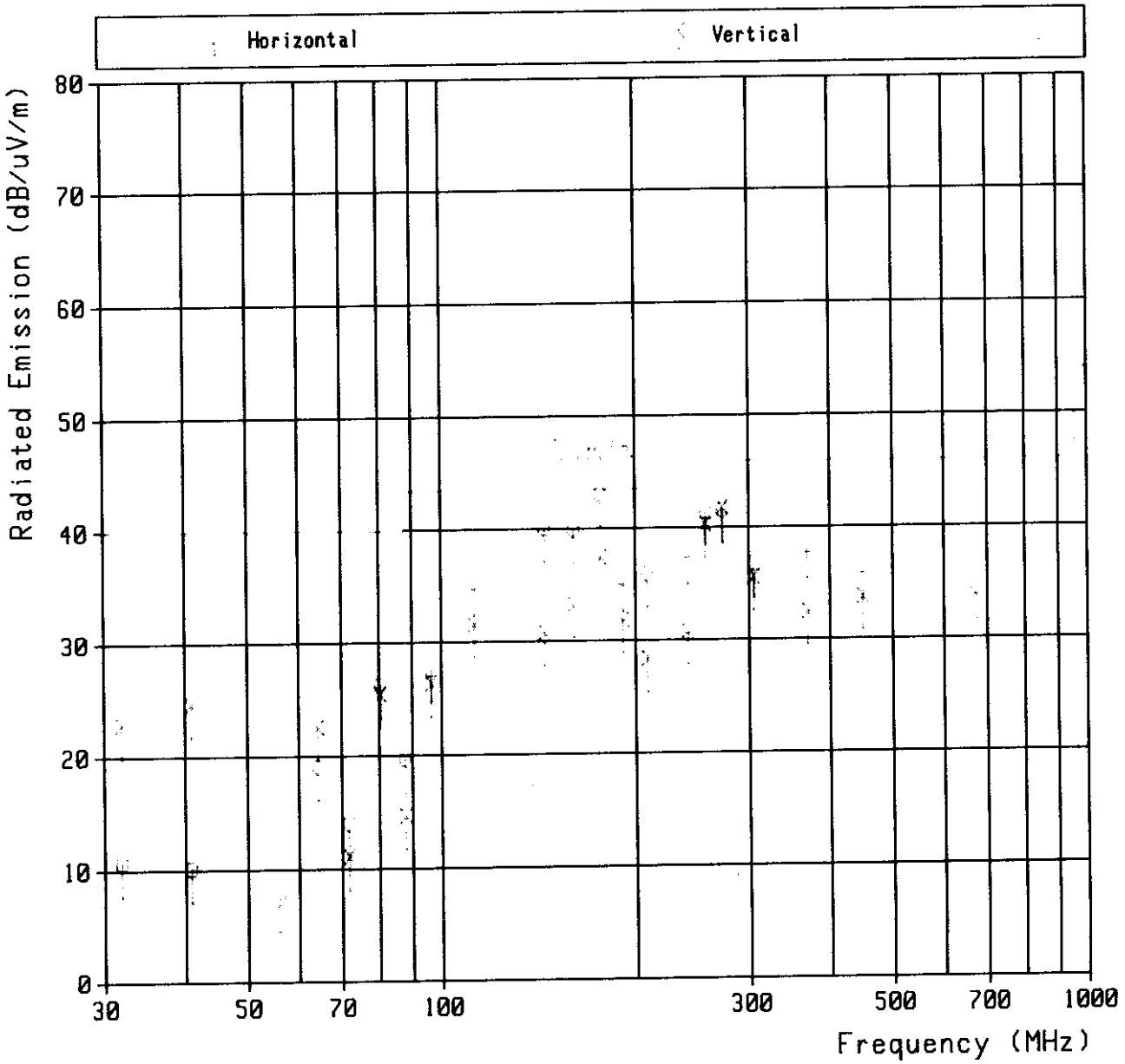
Frequency (MHz)	Correction Factor (dB)	Meter Reading (dB/uV)		Result (dB/uV/m)		Limit (dB/uV/m)
		Horizontal	Vertical	Horizontal	Vertical	
32.0	0.1	10.6	22.8	10.7	22.9	40.0
41.0	2.3	7.9	22.4	10.2	24.7	40.0
56.0	5.3	2.2	< 0.0	7.5	< 5.3	40.0
64.5	6.6	12.5	16.0	19.1	22.6	40.0
72.0	7.7	6.4	3.4	14.1	11.1	40.0
80.6	8.8	17.5	16.7	26.3	25.5	40.0
88.0	9.6	10.1	5.1	19.7	14.7	40.0
96.7	10.6	17.1	15.8	27.7	26.4	43.5
112.8	12.1	23.3	19.5	35.4	31.6	43.5
145.0	14.7	25.4	16.1	40.1	30.8	43.5
161.1	15.8	24.1	17.5	39.9	33.3	43.5
177.2	16.8	26.3	20.7	43.1	37.5	43.5
192.0	17.6	18.0	14.3	35.6	31.9	43.5
209.4	18.5	17.5	9.9	36.0	28.4	43.5
241.7	20.1	17.9	10.7	38.0	30.8	46.0
257.8	20.8	20.7	19.5	41.5	40.3	46.0
273.9	21.4	20.2	20.4	41.6	41.8	46.0
306.2	22.6	14.2	13.0	36.8	35.6	46.0
370.6	24.8	13.6	7.7	38.4	32.5	46.0
451.1	27.0	9.5	6.8	36.5	33.8	46.0
580.1	30.1	< 0.0	< 0.0	< 30.1	< 30.1	46.0
676.7	32.1	2.4	< 0.0	34.5	< 32.1	46.0
800.0	34.4	< 0.0	< 0.0	< 34.4	< 34.4	46.0
1000.0	37.4	< 0.0	< 0.0	< 37.4	< 37.4	54.0

Notes: 1) Measured Distance : 3.0 m
2) The spectrum was checked from 30 MHz to 1000 MHz.
3) The symbol of '<' means 'or less'.
4) Correction Factor includes an antenna factor and a cable (14.0 m) loss.
5) A sample calculation was made at 177.2 MHz.
Correction Factor + Meter Reading = 16.8 + 26.3 = 43.1 dB/uV/m

Model No. : SLV-M20HF
Serial No. : None

§15.109(a) Radiated Emissions Measurement

Testing Signal Sources : Video Modulation Sources (VITS : 1 Vp-p and 5 Vp-p)
Operating Condition : Recording Mode



Model No. : SLV-M20HF
Serial No. : None

§15.109(a) Radiated Emissions Measurement

Testing Signal Sources : RF Modulation Sources (NTSC Colorbar : 70 dB/uV at 193.25 MHz)
Operating Condition : Recording Mode

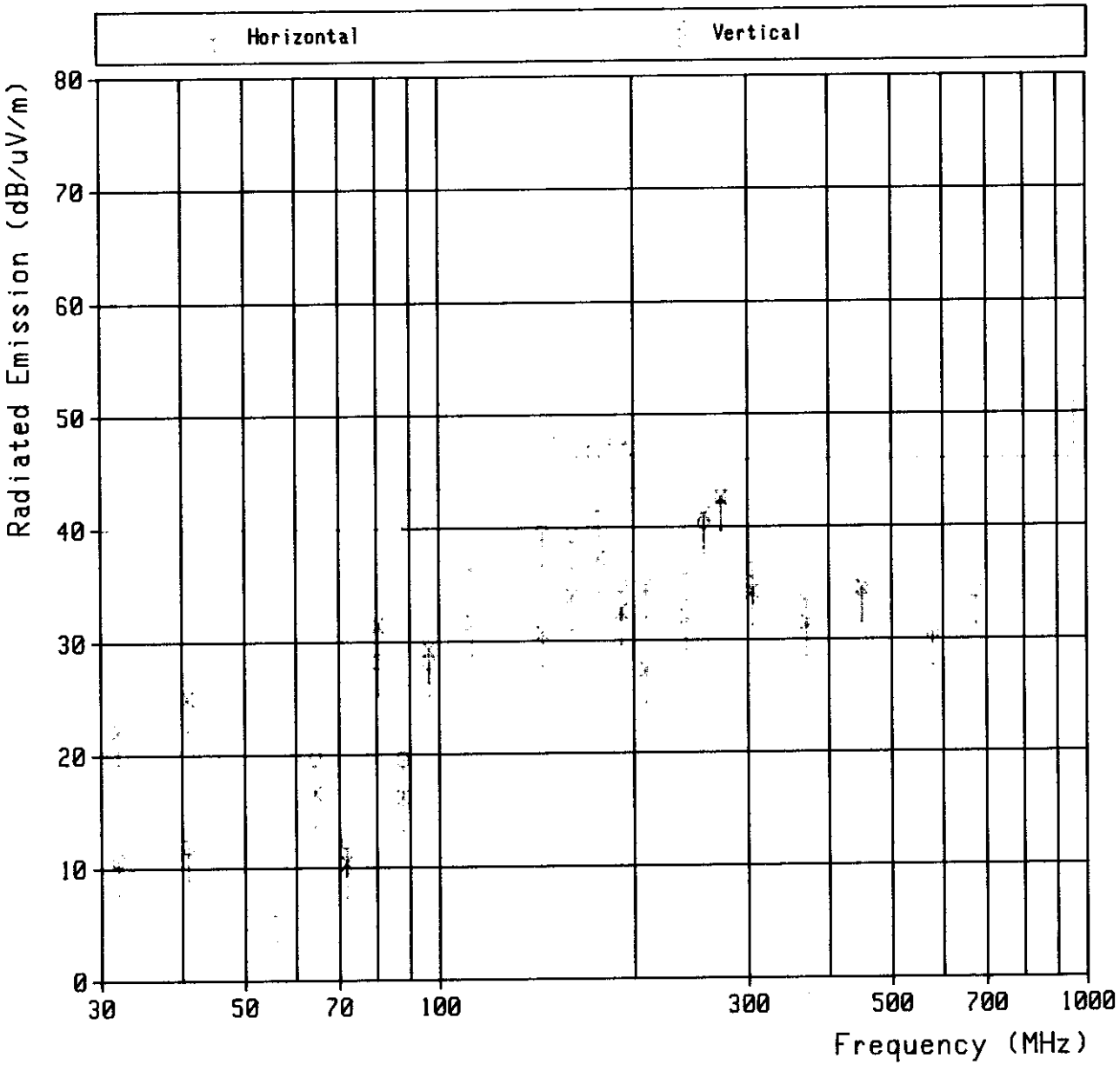
Frequency (MHz)	Correction Factor (dB)	Meter Reading (dB/uV)		Result (dB/uV/m)		Limit (dB/uV/m)
		Horizontal	Vertical	Horizontal	Vertical	
32.0	0.1	10.7	22.1	10.8	22.2	40.0
41.0	2.3	9.7	22.8	12.0	25.1	40.0
56.0	5.3	1.2	< 0.0	6.5	< 5.3	40.0
64.5	6.6	13.1	10.0	19.7	16.6	40.0
72.0	7.7	4.7	2.7	12.4	10.4	40.0
80.6	8.8	19.5	22.7	28.3	31.5	40.0
88.0	9.6	10.0	6.6	19.6	16.2	40.0
96.7	10.6	17.6	18.7	28.2	29.3	43.5
112.8	12.1	24.9	19.6	37.0	31.7	43.5
145.0	14.7	24.9	16.0	39.6	30.7	43.5
161.1	15.8	23.6	18.1	39.4	33.9	43.5
177.2	16.8	25.3	20.5	42.1	37.3	43.5
192.0	17.6	17.3	15.0	34.9	32.6	43.5
209.5	18.5	16.5	8.9	35.0	27.4	43.5
241.7	20.1	16.4	12.0	36.5	32.1	46.0
257.8	20.8	19.8	20.3	40.6	41.1	46.0
273.9	21.4	21.3	21.2	42.7	42.6	46.0
306.2	22.6	13.6	11.7	36.2	34.3	46.0
370.6	24.8	9.3	6.7	34.1	31.5	46.0
451.2	27.0	7.5	7.6	34.5	34.6	46.0
580.1	30.1	0.5	< 0.0	30.6	< 30.1	46.0
676.7	32.1	2.2	< 0.0	34.3	< 32.1	46.0
800.0	34.4	< 0.0	< 0.0	< 34.4	< 34.4	46.0
1000.0	37.4	< 0.0	< 0.0	< 37.4	< 37.4	54.0

Notes: 1) Measured Distance : 3.0 m
2) The spectrum was checked from 30 MHz to 1000 MHz.
3) The symbol of '<' means 'or less'.
4) Correction Factor includes an antenna factor and a cable (14.0 m) loss.
5) A sample calculation was made at 177.2 MHz.
Correction Factor + Meter Reading = 16.8 + 25.3 = 42.1 dB/uV/m

Model No. : SLV-M20HF
Serial No. : None

§15.109(a) Radiated Emissions Measurement

Testing Signal Sources : RF Modulation Sources (NTSC Colorbar : 70 dB/uV at 193.25 MHz)
Operating Condition : Recording Mode



Model No. : SLV-M20HF
Serial No. : None

Date : March 25, 1998
Temp. : 24 °C; Humi. : 42 %

10. §15.115(b)(1)(ii) Output Signal Level Measurement

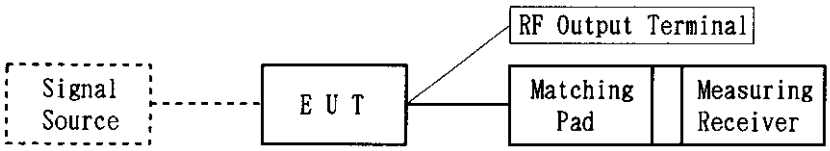
Tested by : K. Hayashi

Kazuya Hayashi, Engineer
Testing Division
EMC Engineering Department

Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(1)(ii) Output Signal Level Measurement

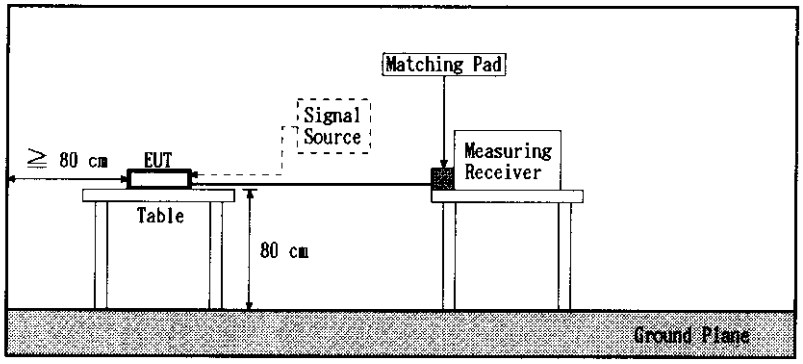
Block Diagram



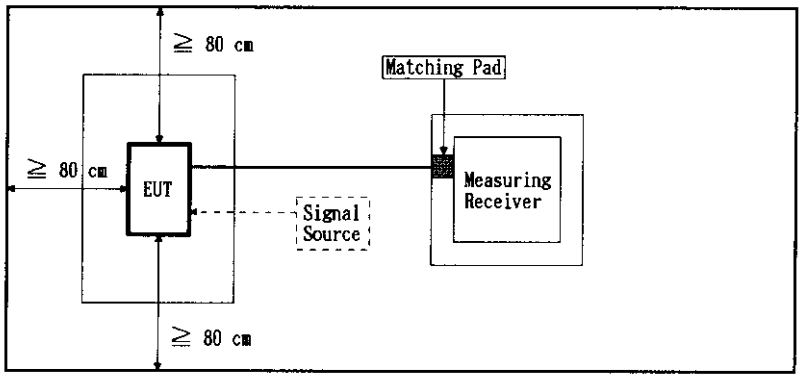
Note: Antenna input terminal of EUT was terminated with the terminator of specified impedances.

Configuration of EUT

Side View



Top View



Note: The same configuration of cables and terminators which were connected to VCR was applied to all applicable measurements, shown as photograph in page 19 and 20.

Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(1)(ii) Output Signal Level Measurement (Visual)

Testing Signal Sources : Internal Modulation Sources (NTSC TV Signal Recording Tape)
Operating Condition : Playing Mode

RF Output Channel	Frequency (MHz)	Matching Pad Loss (dB)	Meter Reading (dB/uV)	Result (dB/uV)	Limit (dB/uV)
3	61.25	7.8	58.4	66.2	69.5
4	67.26	7.8	58.9	66.7	69.5

Testing Signal Sources : Video Modulation Sources (VITS : 1 Vp-p and 5 Vp-p)
Operating Condition : Recording Mode

RF Output Channel	Frequency (MHz)	Matching Pad Loss (dB)	Meter Reading (dB/uV)	Result (dB/uV)	Limit (dB/uV)
3	61.25	7.8	59.5	67.3	69.5
4	67.25	7.8	59.1	66.9	69.5

Testing Signal Sources : RF Modulation Sources (NTSC Colorbar : 70 dB/uV at 193.25 MHz)
Operating Condition : Recording Mode

RF Output Channel	Frequency (MHz)	Matching Pad Loss (dB)	Meter Reading (dB/uV)	Result (dB/uV)	Limit (dB/uV)
3	61.25	7.8	59.4	67.2	69.5
4	67.25	7.8	59.0	66.8	69.5

Notes: 1) Spectrum Analyzer ; SPAN : 10 MHz, RES BW : 100 kHz, VBW : 300 kHz, SWP : 20 msec
2) Impedance at the RF output terminal : 75 ohms (Unbalanced)
3) A sample calculation was made at 61.25 MHz.
Matching Pad Loss + Meter Reading = 7.8 + 59.5 = 67.3 dB/uV

Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(1)(ii) Output Signal Level Measurement (Aural)

Testing Signal Sources : Internal Modulation Sources (NTSC TV Signal Recording Tape)
Operating Condition : Playing Mode

RF Output Channel	Frequency (MHz)	Matching Pad Loss (dB)	Meter Reading (dB/uV)	Result (dB/uV)	Limit (dB/uV)
3	65.74	7.8	42.1	49.9	56.5
4	71.74	7.8	41.8	49.6	56.5

Testing Signal Sources : Video Modulation Sources (VITS : 1 Vp-p and 5 Vp-p)
Operating Condition : Recording Mode

RF Output Channel	Frequency (MHz)	Matching Pad Loss (dB)	Meter Reading (dB/uV)	Result (dB/uV)	Limit (dB/uV)
3	65.76	7.8	42.3	50.1	56.5
4	71.74	7.8	41.8	49.6	56.5

Testing Signal Sources : RF Modulation Sources (NTSC Colorbar : 70 dB/uV at 193.25 MHz)
Operating Condition : Recording Mode

RF Output Channel	Frequency (MHz)	Matching Pad Loss (dB)	Meter Reading (dB/uV)	Result (dB/uV)	Limit (dB/uV)
3	65.77	7.8	42.1	49.9	56.5
4	71.76	7.8	41.9	49.7	56.5

Notes: 1) Spectrum Analyzer ; SPAN : 10 MHz, RES BW : 100 kHz, VBW : 300 kHz, SWP : 20 msec
2) Impedance at the RF output terminal : 75 ohms (Unbalanced)
3) A sample calculation was made at 65.76 MHz.
Matching Pad Loss + Meter Reading = 7.8 + 42.3 = 50.1 dB/uV

Model No. : SLV-M20HF
Serial No. : None

Date : March 25, 1998
Temp. : 24 °C; Humi. : 42 %

11. §15.115(b)(2)(ii) Spurious Conducted Level Measurement

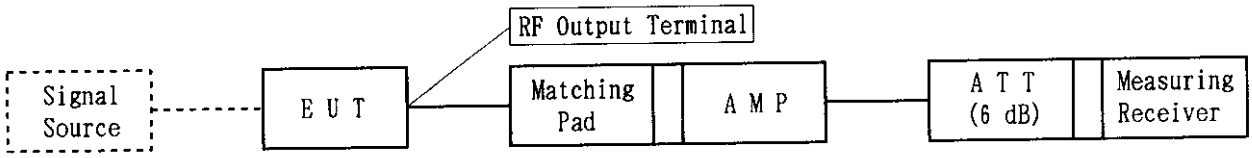
Tested by : K. Hayashi

Kazuya Hayashi, Engineer
Testing Division
EMC Engineering Department

Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(2)(ii) Spurious Conducted Level Measurement

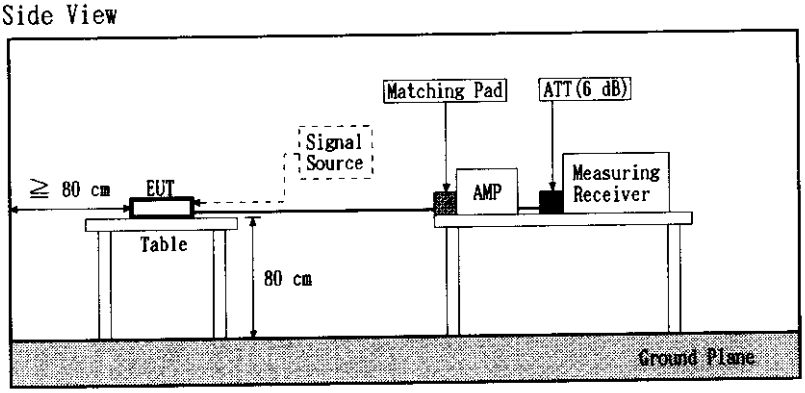
Block Diagram



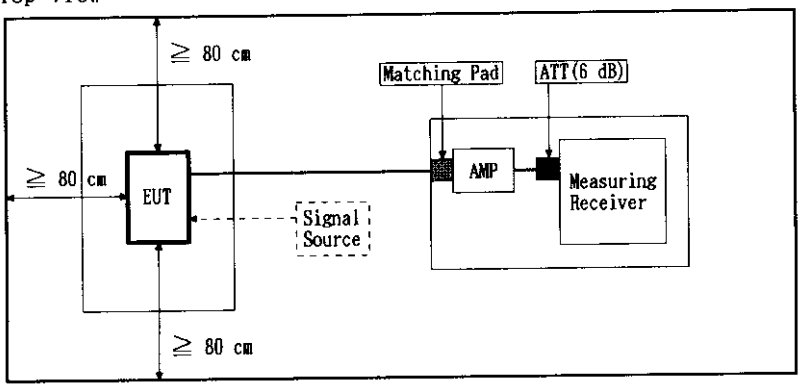
Note: Antenna input terminal of EUT was terminated with the terminator of specified impedances.

Configuration of EUT

Side View



Top View



Note: The same configuration of cables and terminators which were connected to VCR was applied to all applicable measurements, shown as photograph in page 19 and 20.

Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(2)(ii) Spurious Conducted Level Measurement

Testing Signal Sources : Internal Modulation Sources (NTSC TV Signal Recording Tape)
Operating Condition : Playing Mode

RF Output Channel : No.3

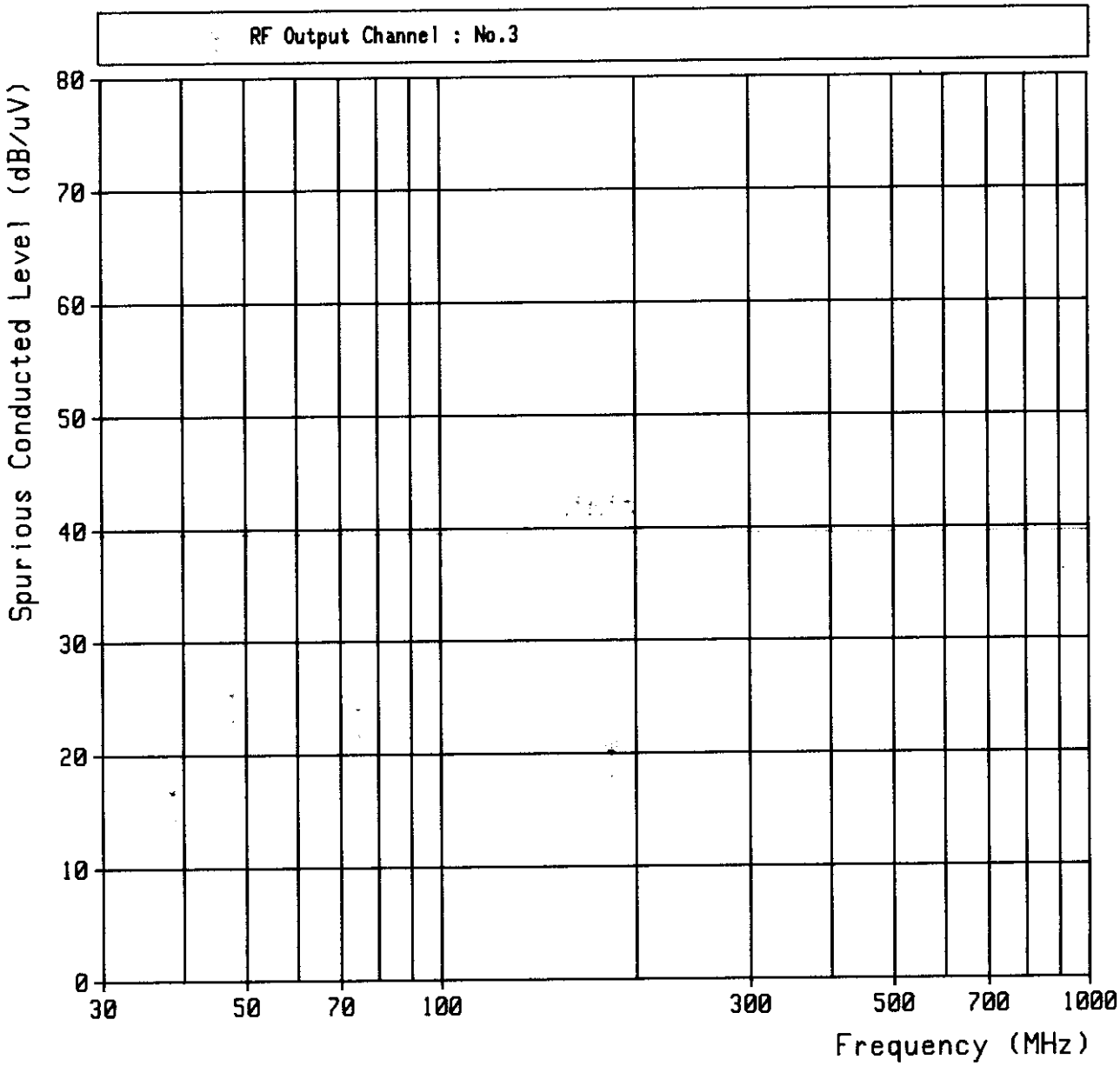
Frequency (MHz)	Correction Factor (dB)	Meter Reading (dB/uV)	Result (dB/uV)	Limit (dB/uV)
30.0	-13.2	< 30.0	< 16.8	39.6
38.8	-13.2	30.5	17.3	39.6
47.8	-13.2	39.2	26.0	39.6
56.6	-13.2	< 30.0	< 16.8	39.6
74.8	-13.2	37.8	24.6	39.6
83.8	-13.2	< 30.0	< 16.8	39.6
122.5	-13.1	< 30.0	< 16.9	39.6
183.7	-13.0	33.9	20.9	39.6
245.0	-12.9	< 30.0	< 17.1	39.6
306.3	-12.9	< 30.0	< 17.1	39.6
367.5	-12.8	< 30.0	< 17.2	39.6
428.8	-12.8	< 30.0	< 17.2	39.6
490.0	-12.8	< 30.0	< 17.2	39.6
551.3	-12.7	< 30.0	< 17.3	39.6
612.5	-12.6	< 30.0	< 17.4	39.6
673.8	-12.4	< 30.0	< 17.6	39.6
735.0	-12.2	< 30.0	< 17.8	39.6
796.3	-12.0	< 30.0	< 18.0	39.6
857.5	-12.1	< 30.0	< 17.9	39.6
918.8	-12.4	< 30.0	< 17.6	39.6
980.0	-12.6	< 30.0	< 17.4	39.6

Notes:
1) The spectrum was checked from 30 MHz to 1000 MHz.
2) Spectrum Analyzer ; SPAN : 10 MHz, RES BW : 100 kHz, VBW : 300 kHz, SWP : 20 msec
3) Impedance at the RF output terminal : 75 ohms (Unbalanced)
4) The symbol of '<' means 'or less'.
5) Correction Factor includes a gain of preamplifier, a matching pad loss and an attenuation pad loss.
6) A sample calculation was made at 47.8 MHz.
Correction Factor + Meter Reading = -13.2 + 39.2 = 26.0 dB/uV

Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(2)(ii) Spurious Conducted Level Measurement

Testing Signal Sources : Internal Modulation Sources (NTSC TV Signal Recording Tape)
Operating Condition : Playing Mode



Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(2)(ii) Spurious Conducted Level Measurement

Testing Signal Sources : Internal Modulation Sources (NTSC TV Signal Recording Tape)
Operating Condition : Playing Mode

RF Output Channel : No.4

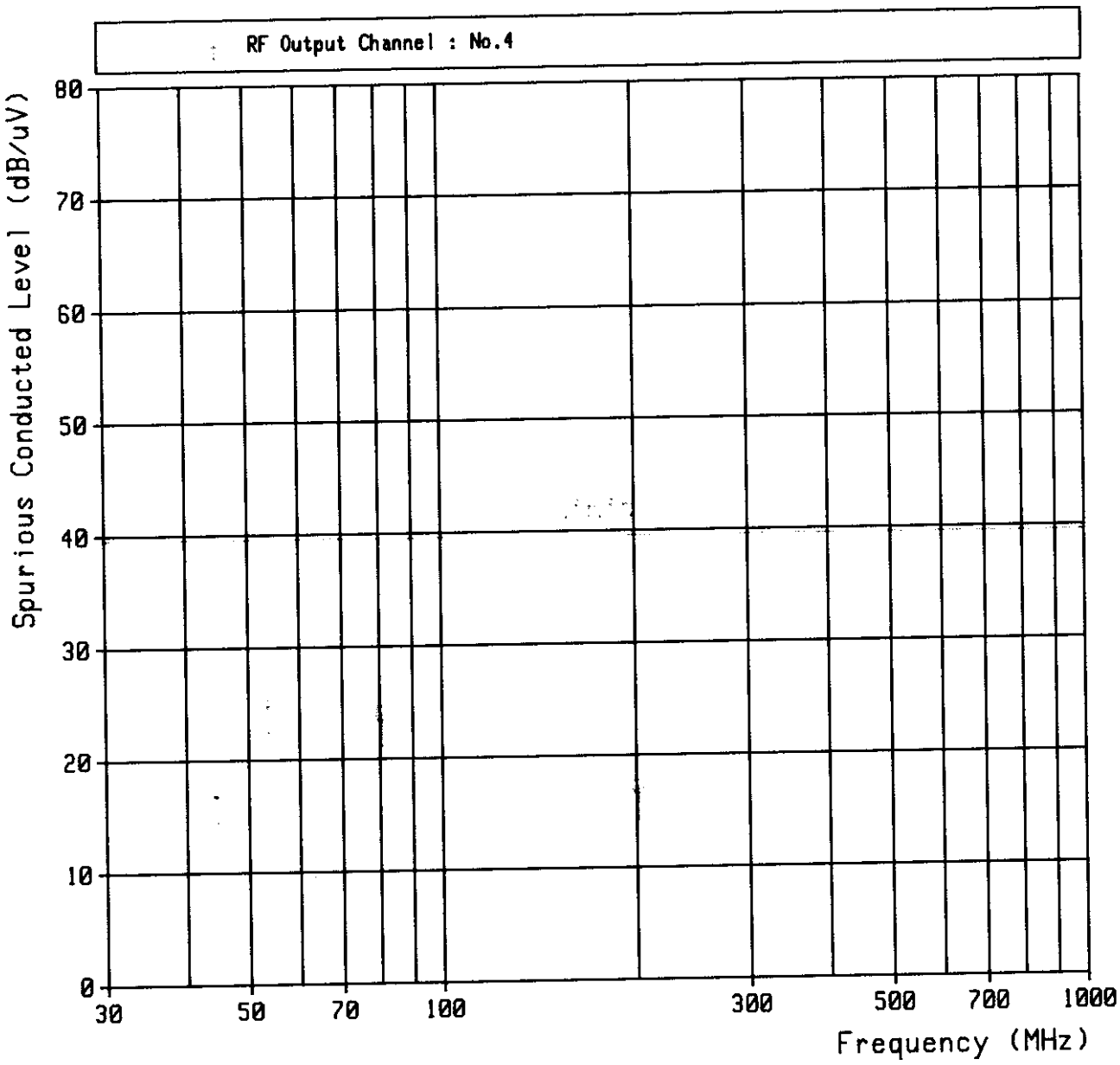
Frequency (MHz)	Correction Factor (dB)	Meter Reading (dB/uV)	Result (dB/uV)	Limit (dB/uV)
30.0	-13.2	< 30.0	< 16.8	39.6
35.0	-13.2	< 30.0	< 16.8	39.6
40.0	-13.2	< 30.0	< 16.8	39.6
44.8	-13.2	30.6	17.4	39.6
53.8	-13.2	38.6	25.4	39.6
62.6	-13.2	< 30.0	< 16.8	39.6
80.7	-13.2	37.3	24.1	39.6
89.7	-13.2	< 30.0	< 16.8	39.6
134.5	-13.1	< 30.0	< 16.9	39.6
201.7	-13.0	30.2	17.2	39.6
269.0	-12.9	< 30.0	< 17.1	39.6
336.3	-12.9	< 30.0	< 17.1	39.6
403.5	-12.8	< 30.0	< 17.2	39.6
470.8	-12.8	< 30.0	< 17.2	39.6
538.0	-12.7	< 30.0	< 17.3	39.6
605.3	-12.7	< 30.0	< 17.3	39.6
672.5	-12.4	< 30.0	< 17.6	39.6
739.8	-12.2	< 30.0	< 17.8	39.6
807.0	-11.9	< 30.0	< 18.1	39.6
874.3	-12.2	< 30.0	< 17.8	39.6
941.5	-12.5	< 30.0	< 17.5	39.6

Notes: 1) The spectrum was checked from 30 MHz to 1000 MHz.
2) Spectrum Analyzer ; SPAN : 10 MHz, RES BW : 100 kHz, VBW : 300 kHz, SWP : 20 msec
3) Impedance at the RF output terminal : 75 ohms (Unbalanced)
4) The symbol of '<' means 'or less'.
5) Correction Factor includes a gain of preamplifier, a matching pad loss and an attenuation pad loss.
6) A sample calculation was made at 53.8 MHz.
Correction Factor + Meter Reading = -13.2 + 38.6 = 25.4 dB/uV

Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(2)(ii) Spurious Conducted Level Measurement

Testing Signal Sources : Internal Modulation Sources (NTSC TV Signal Recording Tape)
Operating Condition : Playing Mode



Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(2)(ii) Spurious Conducted Level Measurement

Testing Signal Sources : Video Modulation Sources (VITS : 1 Vp-p and 5 Vp-p)
Operating Condition : Recording Mode

RF Output Channel : No.3

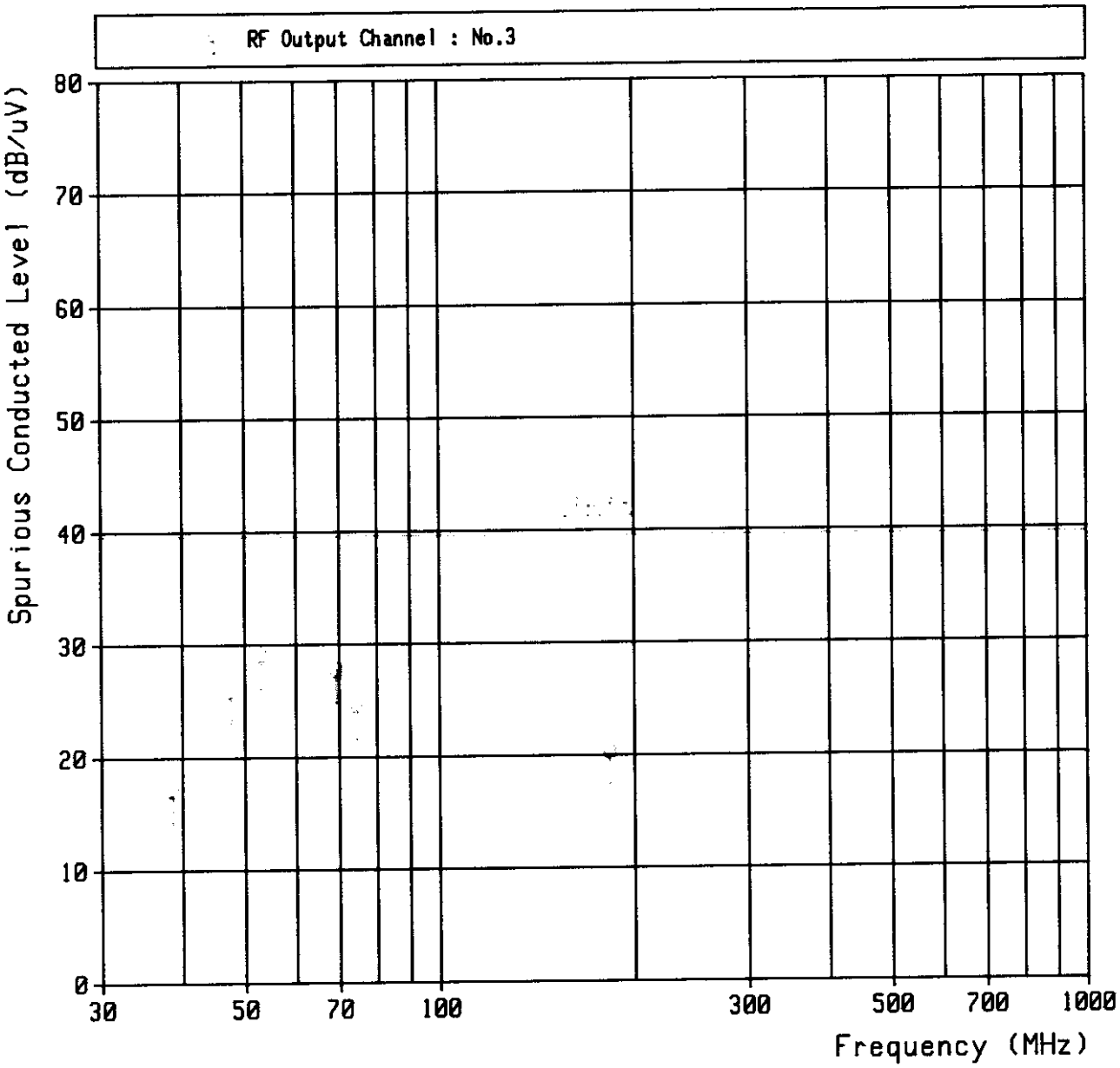
Frequency (MHz)	Correction Factor (dB)	Meter Reading (dB/uV)	Result (dB/uV)	Limit (dB/uV)
30.0	-13.2	< 30.0	< 16.8	39.6
38.8	-13.2	30.4	17.2	39.6
47.8	-13.2	39.1	25.9	39.6
53.1	-13.2	42.3	29.1	39.6
56.6	-13.2	< 30.0	< 16.8	39.6
69.4	-13.2	41.0	27.8	39.6
74.7	-13.2	37.8	24.6	39.6
83.8	-13.2	< 30.0	< 16.8	39.6
122.5	-13.1	< 30.0	< 16.9	39.6
183.7	-13.0	33.4	20.4	39.6
245.0	-12.9	< 30.0	< 17.1	39.6
306.3	-12.9	< 30.0	< 17.1	39.6
367.5	-12.8	< 30.0	< 17.2	39.6
428.8	-12.8	< 30.0	< 17.2	39.6
490.0	-12.8	< 30.0	< 17.2	39.6
551.3	-12.7	< 30.0	< 17.3	39.6
612.5	-12.6	< 30.0	< 17.4	39.6
673.8	-12.4	< 30.0	< 17.6	39.6
735.0	-12.2	< 30.0	< 17.8	39.6
796.3	-12.0	< 30.0	< 18.0	39.6
857.5	-12.1	< 30.0	< 17.9	39.6
918.8	-12.4	< 30.0	< 17.6	39.6
980.0	-12.6	< 30.0	< 17.4	39.6

Notes: 1) The spectrum was checked from 30 MHz to 1000 MHz.
2) Spectrum Analyzer ; SPAN : 10 MHz, RES BW : 100 kHz, VBW : 300 kHz, SWP : 20 msec
3) Impedance at the RF output terminal : 75 ohms (Unbalanced)
4) The symbol of '<' means 'or less'.
5) Correction Factor includes a gain of preamplifier, a matching pad loss and an attenuation pad loss.
6) A sample calculation was made at 53.1 MHz.
Correction Factor + Meter Reading = -13.2 + 42.3 = 29.1 dB/uV

Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(2)(ii) Spurious Conducted Level Measurement

Testing Signal Sources : Video Modulation Sources (VITS : 1 Vp-p and 5 Vp-p)
Operating Condition : Recording Mode



Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(2)(ii) Spurious Conducted Level Measurement

Testing Signal Sources : Video Modulation Sources (VITS : 1 Vp-p and 5 Vp-p)
Operating Condition : Recording Mode

RF Output Channel : No.4

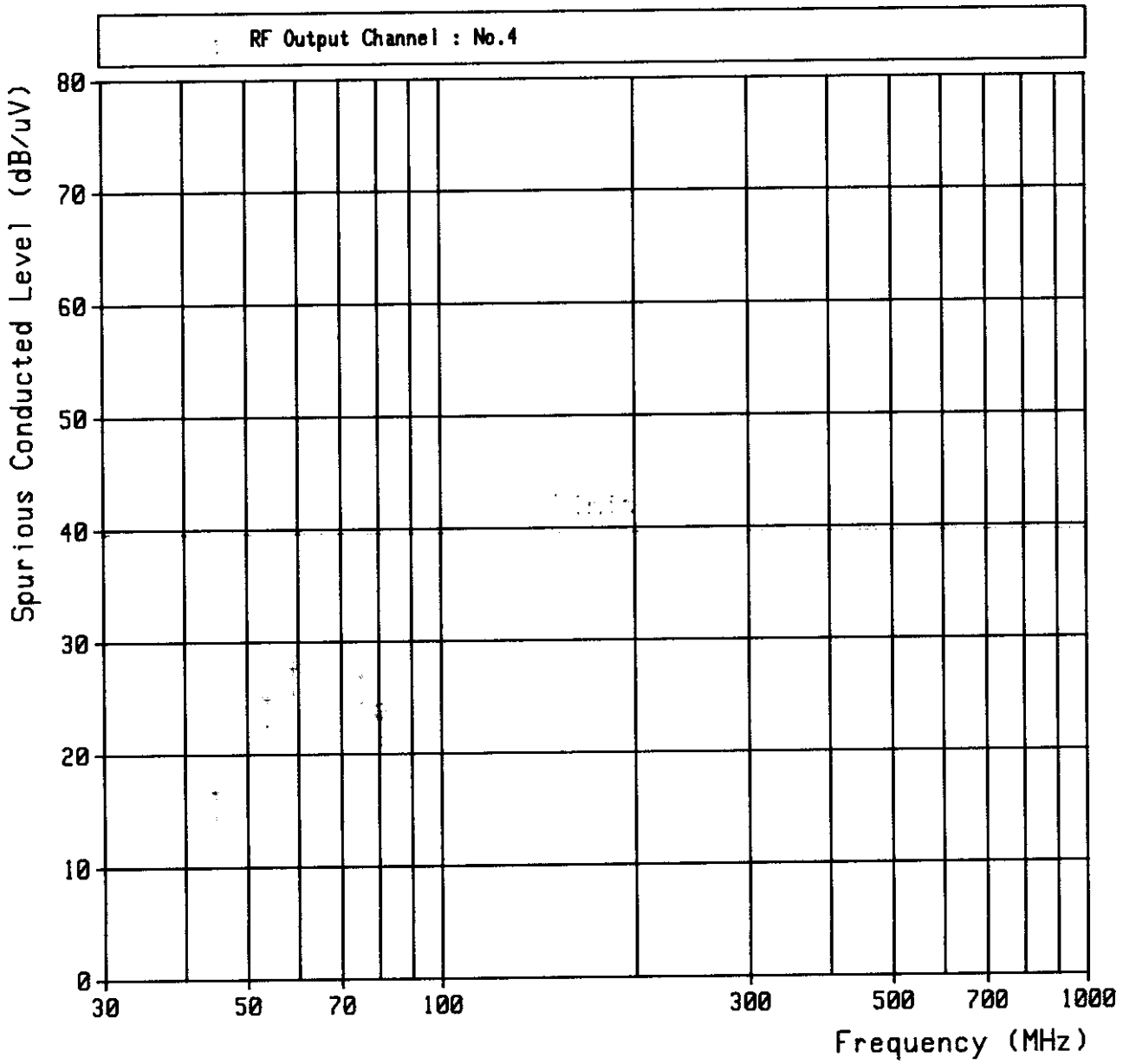
Frequency (MHz)	Correction Factor (dB)	Meter Reading (dB/uV)	Result (dB/uV)	Limit (dB/uV)
30.0	-13.2	< 30.0	< 16.8	39.6
35.0	-13.2	< 30.0	< 16.8	39.6
40.0	-13.2	< 30.0	< 16.8	39.6
44.8	-13.2	30.5	17.3	39.6
53.8	-13.2	38.7	25.5	39.6
59.1	-13.2	41.5	28.3	39.6
62.6	-13.2	< 30.0	< 16.8	39.6
75.4	-13.2	40.7	27.5	39.6
80.7	-13.2	37.0	23.8	39.6
89.7	-13.2	< 30.0	< 16.8	39.6
134.5	-13.1	< 30.0	< 16.9	39.6
201.7	-13.0	< 30.0	< 17.0	39.6
269.0	-12.9	< 30.0	< 17.1	39.6
336.3	-12.9	< 30.0	< 17.1	39.6
403.5	-12.8	< 30.0	< 17.2	39.6
470.8	-12.8	< 30.0	< 17.2	39.6
538.0	-12.7	< 30.0	< 17.3	39.6
605.3	-12.7	< 30.0	< 17.3	39.6
672.5	-12.4	< 30.0	< 17.6	39.6
739.8	-12.2	< 30.0	< 17.8	39.6
807.0	-11.9	< 30.0	< 18.1	39.6
874.3	-12.2	< 30.0	< 17.8	39.6
941.5	-12.5	< 30.0	< 17.5	39.6

Notes:
1) The spectrum was checked from 30 MHz to 1000 MHz.
2) Spectrum Analyzer ; SPAN : 10 MHz, RES BW : 100 kHz, VBW : 300 kHz, SWP : 20 msec
3) Impedance at the RF output terminal : 75 ohms (Unbalanced)
4) The symbol of '<' means 'or less'.
5) Correction Factor includes a gain of preamplifier, a matching pad loss and an attenuation pad loss.
6) A sample calculation was made at 59.1 MHz.
Correction Factor + Meter Reading = -13.2 + 41.5 = 28.3 dB/uV

Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(2)(ii) Spurious Conducted Level Measurement

Testing Signal Sources : Video Modulation Sources (VITS : 1 Vp-p and 5 Vp-p)
Operating Condition : Recording Mode



Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(2)(ii) Spurious Conducted Level Measurement

Testing Signal Sources : RF Modulation Sources (NTSC Colorbar : 70 dB/uV at 193.25 MHz)
Operating Condition : Recording Mode

RF Output Channel : No.3

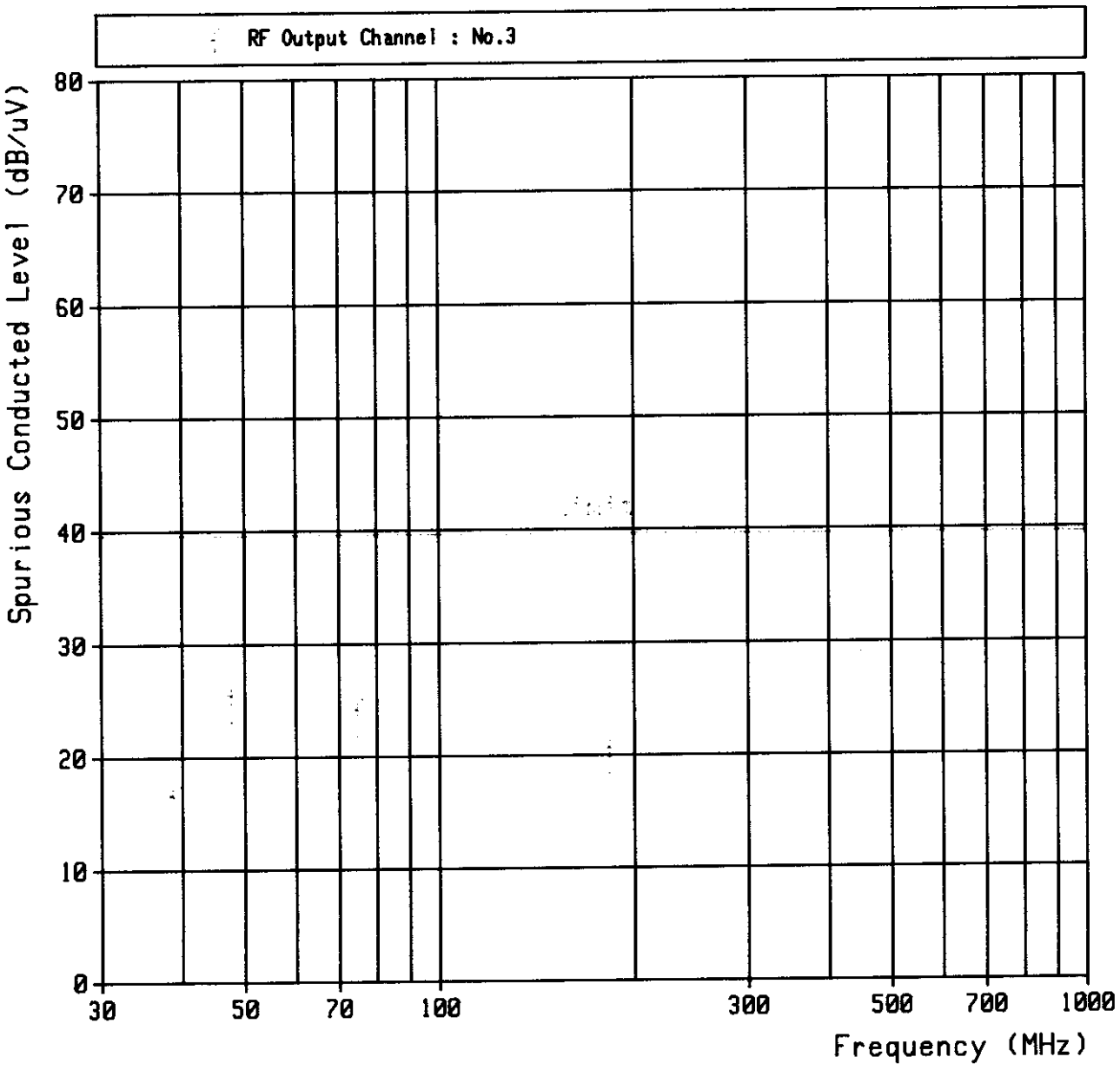
Frequency (MHz)	Correction Factor (dB)	Meter Reading (dB/uV)	Result (dB/uV)	Limit (dB/uV)
30.0	-13.2	< 30.0	< 16.8	39.6
38.8	-13.2	30.4	17.2	39.6
47.8	-13.2	39.3	26.1	39.6
56.6	-13.2	< 30.0	< 16.8	39.6
74.8	-13.2	38.0	24.8	39.6
83.8	-13.2	< 30.0	< 16.8	39.6
122.5	-13.1	< 30.0	< 16.9	39.6
183.7	-13.0	34.3	21.3	39.6
245.0	-12.9	< 30.0	< 17.1	39.6
306.3	-12.9	< 30.0	< 17.1	39.6
367.5	-12.8	< 30.0	< 17.2	39.6
428.8	-12.8	< 30.0	< 17.2	39.6
490.0	-12.8	< 30.0	< 17.2	39.6
551.3	-12.7	< 30.0	< 17.3	39.6
612.5	-12.6	< 30.0	< 17.4	39.6
673.8	-12.4	< 30.0	< 17.6	39.6
735.0	-12.2	< 30.0	< 17.8	39.6
796.3	-12.0	< 30.0	< 18.0	39.6
857.5	-12.1	< 30.0	< 17.9	39.6
918.8	-12.4	< 30.0	< 17.6	39.6
980.0	-12.6	< 30.0	< 17.4	39.6

Notes:
1) The spectrum was checked from 30 MHz to 1000 MHz.
2) Spectrum Analyzer ; SPAN : 10 MHz, RES BW : 100 kHz, VBW : 300 kHz, SWP : 20 msec
3) Impedance at the RF output terminal : 75 ohms (Unbalanced)
4) The symbol of '<' means 'or less'.
5) Correction Factor includes a gain of preamplifier, a matching pad loss and an attenuation pad loss.
6) A sample calculation was made at 47.8 MHz.
Correction Factor + Meter Reading = -13.2 + 39.3 = 26.1 dB/uV

Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(2)(ii) Spurious Conducted Level Measurement

Testing Signal Sources : RF Modulation Sources (NTSC Colorbar : 70 dB/uV at 193.25 MHz)
Operating Condition : Recording Mode



Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(2)(ii) Spurious Conducted Level Measurement

Testing Signal Sources : RF Modulation Sources (NTSC Colorbar : 70 dB/uV at 193.25 MHz)
Operating Condition : Recording Mode

RF Output Channel : No.4

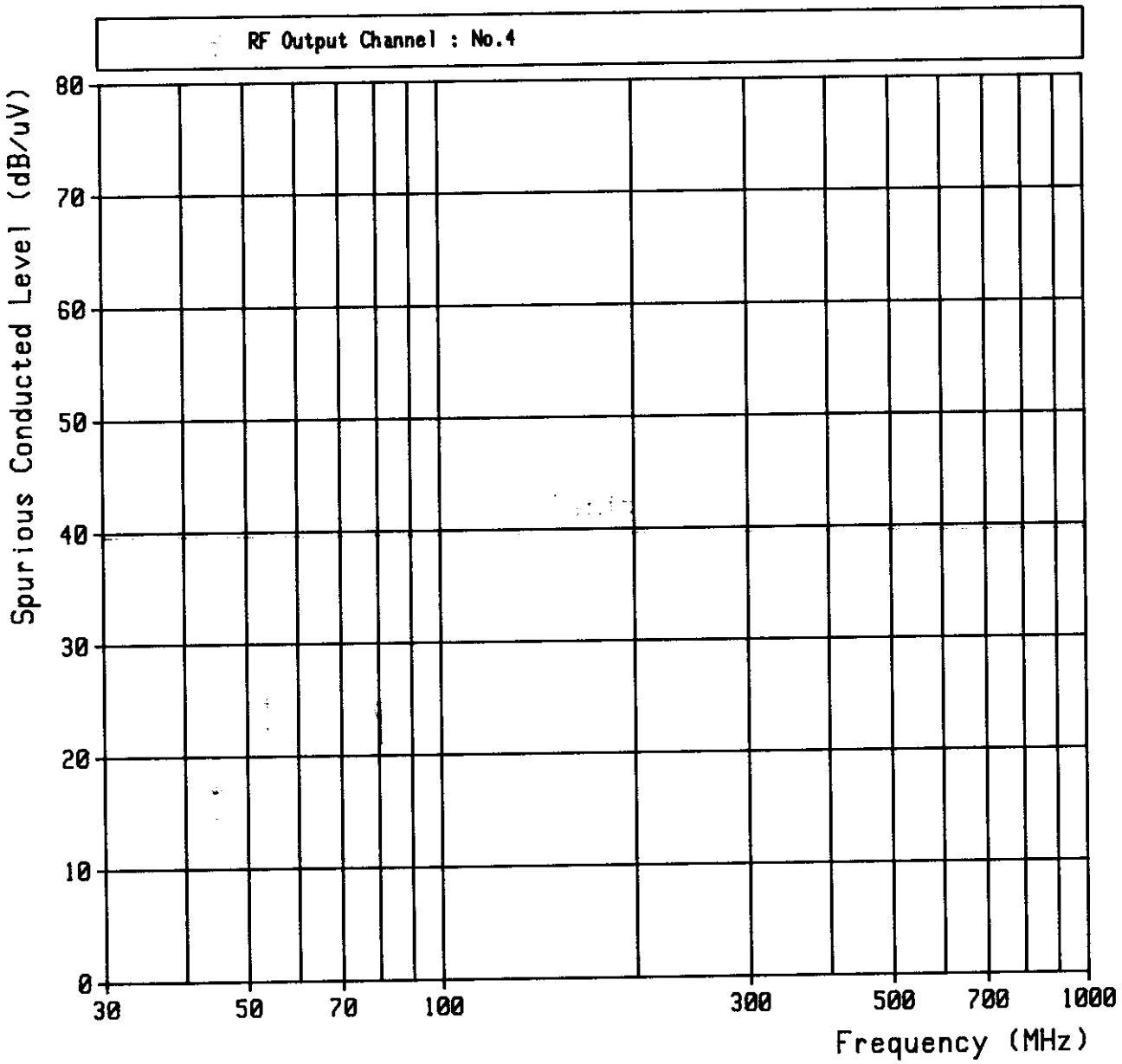
Frequency (MHz)	Correction Factor (dB)	Meter Reading (dB/uV)	Result (dB/uV)	Limit (dB/uV)
30.0	-13.2	< 30.0	< 16.8	39.6
35.0	-13.2	< 30.0	< 16.8	39.6
40.0	-13.2	< 30.0	< 16.8	39.6
44.8	-13.2	30.7	17.5	39.6
53.8	-13.2	38.6	25.4	39.6
62.6	-13.2	< 30.0	< 16.8	39.6
80.7	-13.2	37.3	24.1	39.6
89.7	-13.2	< 30.0	< 16.8	39.6
134.5	-13.1	< 30.0	< 16.9	39.6
201.7	-13.0	< 30.0	< 17.0	39.6
269.0	-12.9	< 30.0	< 17.1	39.6
336.3	-12.9	< 30.0	< 17.1	39.6
403.5	-12.8	< 30.0	< 17.2	39.6
470.8	-12.8	< 30.0	< 17.2	39.6
538.0	-12.7	< 30.0	< 17.3	39.6
605.3	-12.7	< 30.0	< 17.3	39.6
672.5	-12.4	< 30.0	< 17.6	39.6
739.8	-12.2	< 30.0	< 17.8	39.6
807.0	-11.9	< 30.0	< 18.1	39.6
874.3	-12.2	< 30.0	< 17.8	39.6
941.5	-12.5	< 30.0	< 17.5	39.6

Notes:
1) The spectrum was checked from 30 MHz to 1000 MHz.
2) Spectrum Analyzer ; SPAN : 10 MHz, RES BW : 100 kHz, VBW : 300 kHz, SWP : 20 msec
3) Impedance at the RF output terminal : 75 ohms (Unbalanced)
4) The symbol of '<' means 'or less'.
5) Correction Factor includes a gain of preamplifier, a matching pad loss and an attenuation pad loss.
6) A sample calculation was made at 53.8 MHz.
Correction Factor + Meter Reading = -13.2 + 38.6 = 25.4 dB/uV

Model No. : SLV-M20HF
Serial No. : None

§15.115(b)(2)(ii) Spurious Conducted Level Measurement

Testing Signal Sources : RF Modulation Sources (NTSC Colorbar : 70 dB/uV at 193.25 MHz)
Operating Condition : Recording Mode



Model No. : SLV-M20HF
Serial No. : None

Date : March 25, 1998
Temp. : 24 °C; Humi. : 42 %

12. §15.115(c)(1)(ii) Antenna Transfer Switch Measurement

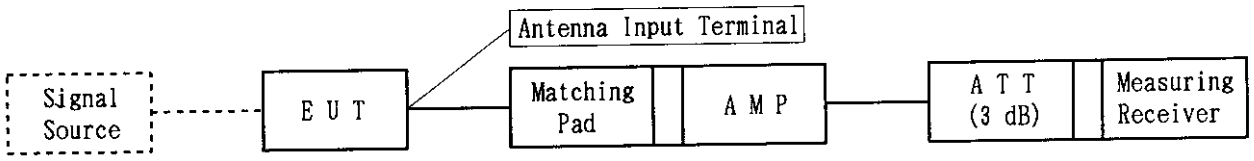
Tested by : K. Hayashi

Kazuya Hayashi, Engineer
Testing Division
EMC Engineering Department

Model No. : SLV-M20HF
Serial No. : None

§15.115(c)(1)(ii) Antenna Transfer Switch Measurement

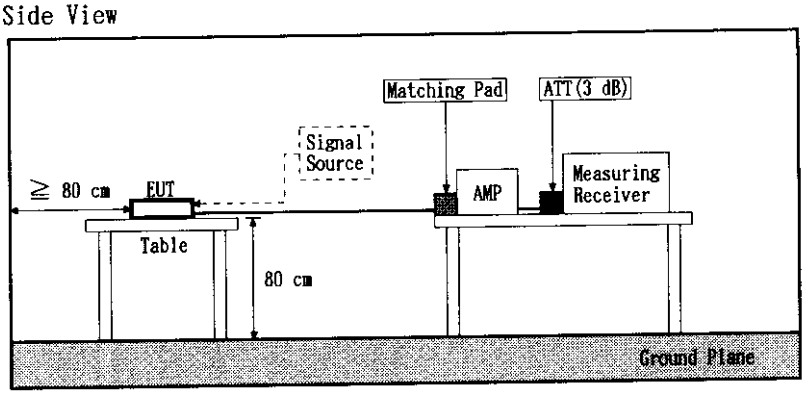
Block Diagram



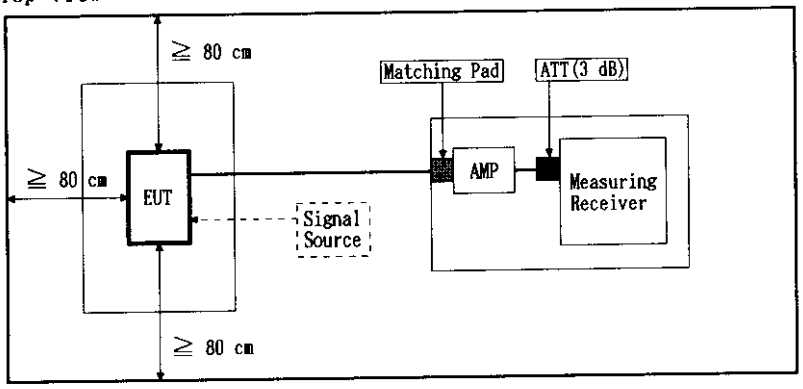
Note: RF output terminal of EUT was connected to the cable terminated with the specified impedances.

Configuration of EUT

Side View



Top View



Note: The same configuration of cables and terminators which were connected to VCR was applied to all applicable measurements, shown as photograph in page 19 and 20.

Model No. : SLV-M20HF
Serial No. : None

§15.115(c)(1)(ii) Antenna Transfer Switch Measurement

Testing Signal Sources : Internal Modulation Sources (NTSC TV Signal Recording Tape)
Operating Condition : Playing Mode

RF Output Channel	Frequency (MHz)	Correction Factor (dB)	Meter Reading (dB/uV)	Result (dB/uV)	Limit (dB/uV)
3	61.22	-16.2	25.2	9.0	9.5
4	67.22	-16.2	18.6	2.4	9.5

Testing Signal Sources : Video Modulation Sources (VITS : 1 Vp-p and 5 Vp-p)
Operating Condition : Recording Mode

RF Output Channel	Frequency (MHz)	Correction Factor (dB)	Meter Reading (dB/uV)	Result (dB/uV)	Limit (dB/uV)
3	61.22	-16.2	25.3	9.1	9.5
4	67.22	-16.2	18.7	2.5	9.5

Testing Signal Sources : RF Modulation Sources (NTSC Colorbar : 70 dB/uV at 193.25 MHz)
Operating Condition : Recording Mode

RF Output Channel	Frequency (MHz)	Correction Factor (dB)	Meter Reading (dB/uV)	Result (dB/uV)	Limit (dB/uV)

Not Applicable

Notes: 1) Spectrum Analyzer ; SPAN : 1 MHz, RES BW : 10kHz, VBW : 10kHz, SWP : 30 msec
2) Impedance at the Antenna input terminal : 75 ohms (Unbalanced)
3) Correction Factor includes a gain of preamplifier, a matching pad loss and an attenuation pad loss.
4) A sample calculation was made at 61.22 MHz.
Correction Factor + Meter Reading = -16.2 + 25.3 = 9.1 dB/uV

Model No. : SLV-M20HF
Serial No. : None

13. Test Equipment Used

Equipment	Manufacturer	Model No. [Serial No.]	Last Cal. [Cal. Interval]
Measuring Receiver	Rohde & Schwarz	ESH 3 [872994/035]	May, 1997 [1 year]
Measuring Receiver	Rohde & Schwarz	ESVP [881487/004]	May, 1997 [1 year]
Spectrum Analyzer	Hewlett Packard	8566B [2140A01091]	April, 1997 [1 year]
Line Impedance Stabilized Network	Kyoritsu Electrical Works	KNW-407 [8-1130-6]	April, 1997 [1 year]
Dipole Antenna	Kyoritsu Electrical Works	KBA-511 [0-170-1]	November, 1997 [1 year]
Dipole Antenna	Kyoritsu Electrical Works	KBA-611 [0-147-14]	November, 1997 [1 year]
Preamplifier	Hewlett Packard	8447D [1937A02168]	July, 1997 [1 year]
Vertical Internal Test Signal Generator (VITS)	Anritsu	MG318A [M08128]	June, 1997 [1 year]
Color TV Pattern Generator	Philips Consumer Electronics	PM 5418 TNSI [LO 609096]	June, 1997 [1 year]
Matching Pad	Wiltron	12N50/75B [90400]	June, 1997 [1 year]
6 dB Attenuation Pad	Weinschel	1 [AD8054]	June, 1997 [1 year]
3 dB Attenuation Pad	Weinschel	1 [AD9615]	June, 1997 [1 year]