SONY

UHF Synthesized Transmitter

WRT-808A

Owner's Record

The model and serial numbers are located at the rear of the unit. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. WRT-808A **Serial No.**_____

Notice for customers in the U.S.A.

Use of Sony wireless devices is regulated by the Federal Communications Commission as described in Part 74 subpart H of the FCC regulations and users authorized thereby are required to obtain an appropriate license.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Table of contents

Precautions

- The unit is designated for use in ambient temperature range of 0℃ to 50℃ (32℉ to 122℉).
- Do not place the unit on or near heat sources, such as lighting equipment, power amplifiers, or in a place subject to direct sunlight or excessive moisture. In such places, the external finish or internal parts of the unit may be damaged.
- If the unit is used in a very humid or dusty place or in a place subject to an active gas, clean its surface as well as the connectors with a dry, sift cloth soon after use.
  Lengthy use of the unit in such places or not cleaning it after its use in such places may shorten its life.
- When cleaning the unit, never use organic solvents such as thinners or benzine, which will damage the finish of the unit.
- The unit has been factory adjusted precisely. Do not tamper with its internal parts or attempt to repair it.

Introduction

The WRT-808A is a plug-on transmitter which converts any handheld dynamic microphone into a wireless microphone.

The WRT-808A is a transmitter to be in combination with the WRR-800A/801A UHF Synthesized Diversity Tuner for an 800MHz band UHF synthesized wireless microphone system.

The WRT-808A can also be used in conventional Sony Wireless Microphone System composed of the WRT-810A/820A UHF Synthesized Transmitter, WRR-820A/840A/850A UHF Synthesized Diversity Tuner, etc.

The microphone/transmitter and tuners of the wireless microphone system are classified by frequency band. A 12MHz frequency band (or two consecutive numbered TV channels, such as 68 and 69 of the WRT-808A/U68 model) is assigned to each microphone/transmitter and tuner model. In building a UHF wireless microphone system, be sure to combine a microphone/transmitter and a tuner having the same TV channel number.

For the selective wireless channels and frequencies, see "Wireless Channel List" on page 10 - 12 .

Features

Easy and steady connection to a microphone

Compact and lightweight

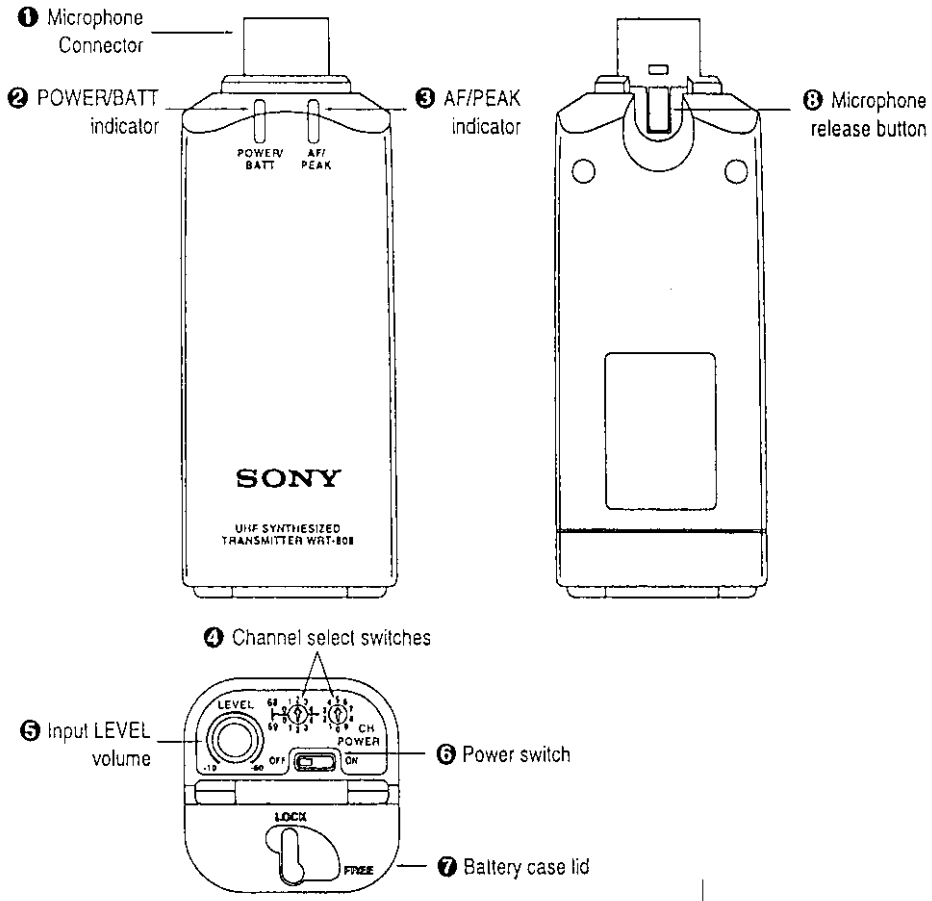
Operation powered by easily available battery

Battery alarm by two-colors LED

Remote battery alarm on tuner

Selectable RF output power

Parts Identification



Display example for U68 model

❶ Microphone connector

Connect to a dynamic microphone which has a XLR type connector.

❷ POWER/BATT indicator

See "Power Supply" on page 6.

❸ AF/PEAK indicator

Lights in green when an audio signal over the reference level is inputted. Lights in red when an audio signal becomes maximum level.

❹ Channel select switches

See "Channel Setting" on page 7.

❺ Input LEVEL volume

Adjust according to the input level.

❻ Power switch

Turns the power of the transmitter ON or OFF.

❼ Battery case lid

See "Power Supply" on page 6.

❽ Microphone release button

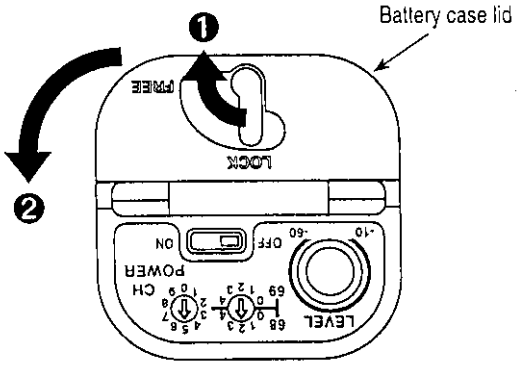
Push this button to release the microphone.

Power supply

The transmitter can operate on two LR6 (size AA) alkaline batteries continuously for about 4 hours at 25℃ (77℉).

Inserting the batteries

1 Turn the knob on the battery case lid as shown below to open the battery compartment.
2 Match the polarity and insert the batteries.
3 Close the lid and turn the knob to its original position.



Display example for U68 model

Battery indication

When you turn the power on, the POWER/BATT indicator lights in green. When the battery level becomes low as about one hour is left for continuous operation, the indicator lights in red as a warning. When the batteries are almost exhausted as the unit does not work, the indicator flashes in red. Promptly replace the batteries when the red indication lights or flashes. When the POWER/BATT indicator lights in red, the BATT indication on the WRR-800A/801A/850A starts flashing.

Note

The indication may be incorrect if the batteries are not new when inserted. If you plan to use the transmitter for a long period, it is best to replace the batteries with new ones.

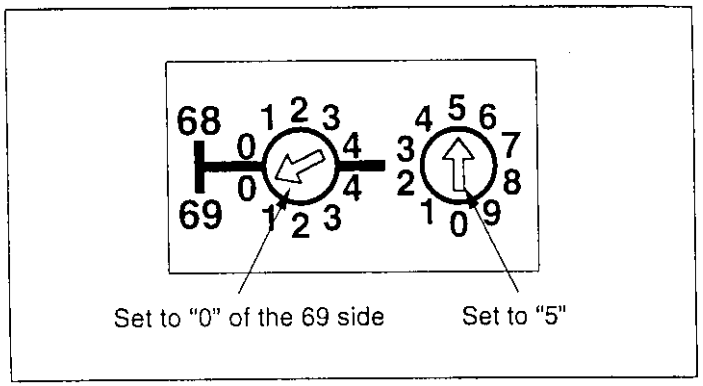
Notes on batteries

- Use new alkaline batteries, and check the recommended "useby" date on the bottom of the batteries.
- Be careful to insert the batteries with the correct polarity.
- When not using the transmitter for a long period, remove the batteries to avoid leakage. If the batteries does leak, clean all leakage from the unit and insert new batteries. Leakage left in the unit may cause poor battery contact. If there seems to be poor battery contact, consult your Sony dealer.

Channel Setting

Set the channel select switches for the desired channel using the screwdriver.
The left switch is for selecting the TV band and 10s digit of the transmitting channel, and the right switch is for selecting the 1s digit of the transmitting channel.

Example: To set to channel 69-05 on the U68 model



Display example for U68 model

Notes

- Turn off the transmitter when setting the transmitting channel to eliminate interference or noise on other wireless equipment.

If the channel select switches are operated while the transmitter is on, the POWER/BATT indicator flashes in green as a warning.

- If you set to any channel other than those listed in "Wireless Channel Lists", the POWER/BATT indicator flashes in green as a warning.
- The transmitter does not transmit while the POWER/BATT indicator is flashing.

Notes on Use

On channel selection

- Make sure that the channel selected on the transmitter is the same as that selected on the tuner used in the same system.
- Depending on the noise or interference conditions, the selectable channels may not necessarily all be usable. If necessary, you can determine the usable channels by stepping the channel selection through a number of channels on a tuner with the transmitter set to OFF. Those channels on which the RF indicator of the tuner does not light are usable.
- If there is a TV broadcasting station near by, do not use the station's channel.

On microphone system operation

- To operate with two or more channels, maintain a distance of at least 30 cm (1 ft.) between each pair of transmitters. *For details of operation with two or more channels, refer to the Operating Instructions for the WRR-800A/801A/805A UHF Synthesized Diversity Tuners.*
- Ensure that the tuners set to channels being used are either turned off or set to the minimum output level.
- When powering the transmitter on or off, to keep the noise to a minimum, set the audio output level from the tuner or mixer to a minimum.
- Powering the transmitter on without checking the channel selection first may interfere with the operation of other microphones/transmitters, if the current setting is already being used.
- To prevent noise generation, keep the microphones/transmitters at least 3 m (10 ft.) away from the tuner antennas when the system allows selection of up to 11 channels.
- Do not grip the body while using as it will significantly degrade good performance, causing dropouts, etc.

Specifications

Transmitter and modulator section

Oscillator	Crystal controlled PLL synthesizer
Carrier frequencies	
U64 model:	770.125 to 781.875 MHz (TV channels 64 and 65)
U66 model:	782.125 to 793.875 MHz (TV channels 66 and 67)
U68 model:	794.125 to 805.875 MHz (TV channels 68 and 69)
	94 settings at 125kHz intervals
Type of emission	110KF3E
RF power output	50mW/10mW selectable
Frequency stability	Within ±0.005%
Spurious radiation	2.5 µW or less
Tone signal	32.768kHz
Type of antenna	Internal

Audio section

Pre-emphasis	50µs
Reference deviation	±5kHz (-60dBV, 1kHz input)
Frequency response	100 to 15,000 Hz
Signal to noise ratio	57dB or more (A-weighted, 1kHz modulation, with reference deviation at WRR-800A/801A)
Audio attenuator	0 to 50dB continuous

Power section

Power requirements	3.0 V DC (two LR6/size AA alkaline batteries)
Battery life	Approx. 4 hours at 25℃ or 77℉ with Sony LR6 alkaline batteries

General

Operating temperature	0℃ to +50℃ (32℉ to 122℉)
Storage temperature	-30℃ to +60℃ (-22℉ to +140℉)
Dimensions	40 x 40 x 108 mm
Mass	165 g

Wireless Channel List

U64 Model/S/F

TV-64 Band/Banda de TV 64/Bande télé 64				TV-65 Band/Banda de TV 65/Bande télé 65			
Channel Canal	Frequency (MHz) Frecuencia Fréquence	Channel Canal	Frequency (MHz) Frecuencia Fréquence	Channel Canal	Frequency (MHz) Frecuencia Fréquence	Channel Canal	Frequency (MHz) Frecuencia Fréquence
64-01	770.125	64-25	773.125	65-01	776.125	65-25	779.125
64-02	770.250	64-26	773.250	65-02	776.250	65-26	779.250
64-03	770.375	64-27	773.375	65-03	776.375	65-27	779.375
64-04	770.500	64-28	773.500	65-04	776.500	65-28	779.500
64-05	770.625	64-29	773.625	65-05	776.625	65-29	779.625
64-06	770.750	64-30	773.750	65-06	776.750	65-30	779.750
64-07	770.875	64-31	773.875	65-07	776.875	65-31	779.875
64-08	771.000	64-32	774.000	65-08	777.000	65-32	780.000
64-09	771.125	64-33	774.125	65-09	777.125	65-33	780.125
64-10	771.250	64-34	774.250	65-10	777.250	65-34	780.250
64-11	771.375	64-35	774.375	65-11	777.375	65-35	780.375
64-12	771.500	64-36	774.500	65-12	777.500	65-36	780.500
64-13	771.625	64-37	774.625	65-13	777.625	65-37	780.625
64-14	771.750	64-38	774.750	65-14	777.750	65-38	780.750
64-15	771.875	64-39	774.875	65-15	777.875	65-39	780.875
64-16	772.000	64-40	775.000	65-16	778.000	65-40	781.000
64-17	772.125	64-41	775.125	65-17	778.125	65-41	781.125
64-18	772.250	64-42	775.250	65-18	778.250	65-42	781.250
64-19	772.375	64-43	775.375	65-19	778.375	65-43	781.375
64-20	772.500	64-44	775.500	65-20	778.500	65-44	781.500
64-21	772.625	64-45	775.625	65-21	778.625	65-45	781.625
64-22	772.750	64-46	775.750	65-22	778.750	65-46	781.750
64-23	772.875	64-47	775.875	65-23	778.875	65-47	781.875
64-24	773.000			65-24	779.000		

U66 Model

TV-66 Band/Banda de TV 66/Bande télé 66				TV-67 Band/Banda de TV 67/Bande télé 67			
Channel Canal	Frequency (MHz) Frecuencia Fréquence	Channel Canal	Frequency (MHz) Frecuencia Fréquence	Channel Canal	Frequency (MHz) Frecuencia Fréquence	Channel Canal	Frequency (MHz) Frecuencia Fréquence
66-01	782.125	66-25	785.125	67-01	788.125	67-25	791.125
66-02	782.250	66-26	785.250	67-02	788.250	67-26	791.250
66-03	782.375	66-27	785.375	67-03	788.375	67-27	791.375
66-04	782.500	66-28	785.500	67-04	788.500	67-28	791.500
66-05	782.625	66-29	785.625	67-05	788.625	67-29	791.625
66-06	782.750	**66-30**	**785.750**	67-06	788.750	**67-30**	**791.750**
66-07	782.875	66-31	785.875	67-07	788.875	67-31	791.875
66-08	783.000	66-32	786.000	67-08	789.000	67-32	792.000
66-09	783.125	66-33	786.125	67-09	789.125	67-33	792.125
66-10	**783.250**	66-34	786.250	**67-10**	**789.250**	67-34	792.250
66-11	783.375	66-35	786.375	67-11	789.375	67-35	792.375
66-12	783.500	66-36	786.500	67-12	789.500	67-36	792.500
66-13	783.625	66-37	786.625	67-13	789.625	67-37	792.625
66-14	783.750	66-38	786.750	67-14	789.750	67-38	792.750
66-15	783.875	66-39	786.875	67-15	789.875	67-39	792.875
66-16	784.000	**66-40**	**787.000**	67-16	790.000	**67-40**	**793.000**
66-17	784.125	66-41	787.125	67-17	790.125	67-41	793.125
66-18	784.250	66-42	787.250	67-18	790.250	67-42	793.250
66-19	784.375	66-43	787.375	67-19	790.375	67-43	793.375
66-20	**784.500**	66-44	787.500	**67-20**	**790.500**	67-44	793.500
66-21	784.625	66-45	787.625	67-21	790.625	67-45	793.625
66-22	784.750	66-46	787.750	67-22	790.750	67-46	793.750
66-23	784.875	66-47	787.875	67-23	790.875	67-47	793.875
66-24	785.000			67-24	791.000		

U68 Model

TV-68 Band/Banda de TV 68/Bande télé 68				TV-69 Band/Banda de TV 69/Bande télé 69			
Channel Canal	Frequency (MHz) Frecuencia Fréquence	Channel Canal	Frequency (MHz) Frecuencia Fréquence	Channel Canal	Frequency (MHz) Frecuencia Fréquence	Channel Canal	Frequency (MHz) Frecuencia Fréquence
68-01	794.125	68-25	797.125	69-01	800.125	69-25	803.125
68-02	794.250	68-26	797.250	69-02	800.250	69-26	803.250
68-03	794.375	68-27	797.375	69-03	800.375	69-27	803.375
68-04	794.500	68-28	797.500	69-04	800.500	69-28	803.500
68-05	794.625	68-29	797.625	69-05	800.625	69-29	803.625
68-06	794.750	68-30	797.750	69-06	800.750	69-30	803.750
68-07	794.875	68-31	797.875	69-07	800.875	69-31	803.875
68-08	795.000	68-32	798.000	69-08	801.000	69-32	804.000
68-09	795.125	68-33	798.125	69-09	801.125	69-33	804.125
68-10	795.250	68-34	798.250	69-10	801.250	69-34	804.250
68-11	795.375	68-35	798.375	69-11	801.375	69-35	804.375
68-12	795.500	68-36	798.500	69-12	801.500	69-36	804.500
68-13	795.625	68-37	798.625	69-13	801.625	69-37	804.625
68-14	795.750	68-38	798.750	69-14	801.750	69-38	804.750
68-15	795.875	68-39	798.875	69-15	801.875	69-39	804.875
68-16	796.000	68-40	799.000	69-16	802.000	69-40	805.000
68-17	796.125	68-41	799.125	69-17	802.125	69-41	805.125
68-18	796.250	68-42	799.250	69-18	802.250	69-42	805.250
68-19	796.375	68-43	799.375	69-19	802.375	69-43	805.375
68-20	796.500	68-44	799.500	69-20	802.500	69-44	805.500
68-21	796.625	68-45	799.625	69-21	802.625	69-45	805.625
68-22	796.750	68-46	799.750	69-22	802.750	69-46	805.750
68-23	796.875	68-47	799.875	69-23	802.875	69-47	805.875
68-24	797.000			69-24	803.000		

(d)-(9) Tune-up procedure at specific operating power levels:

(1) Vcc voltage of RF AMP block

DC-DC converter output is +5V constant. It supplies Vcc of the RF AMP block.
Voltage regulator output is +3V constant. It supplies Vcc of the VCO(CP401).

(2) Measurement of RF power output.

RF power output is measured at output terminal (CN402).

VCO(CP401) output is applied to RF AMP block and the output is applied to L.P.F.and isolator. So RF power output is decided by VCO and RF AMP block output power, L.P.F. insertion loss and isolator insertion loss.

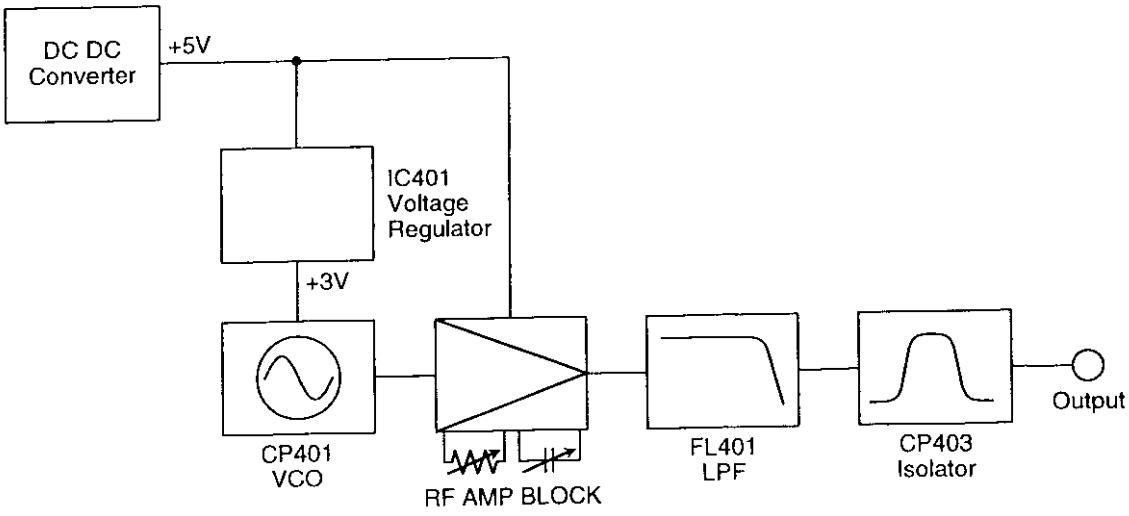
1) VCO RF output power is -1.5 ~ +2.0dBm(at 50Ω load) at 3V power supply voltage.

2) Adjust CT401 and RV401 so that RF AMP block output power is 16 ~ 19dBm (at 50Ω load) when RF AMP block input power is -1.5 ~ +2.0dBm and 5V power supply voltage.

3) L.P.F. insertion loss is less than 0.6dB.

4) Isolator insertion loss is 0.5 ~ 0.9dB.

Therefore RF output power is 50mW(±5mW) by adjusting CT401 and RV401.



(d)-(10)A description of circuitry for determining and stabilizing frequency:

Determination and stability of frequency on PLL synthesizer

1. Divide the oscillation frequency[f] from the VCO(CP401) by a prescaler[1/M](IC401). A counter[1/A](IC401) and N counter[1/N](IC401) and apply it [fr'] to a phase detector.

$$fr' = \frac{1}{MN+A} f \quad \text{---- (1)}$$

2. The integrated output signal of the phase detector, which is taken by the phase difference from[fr'] to a reference oscillator[fr], and use the signal as the control voltage for the VCO.

3. With the above 1 and 2(loop 1 through 2), the circuit maintains its balance.

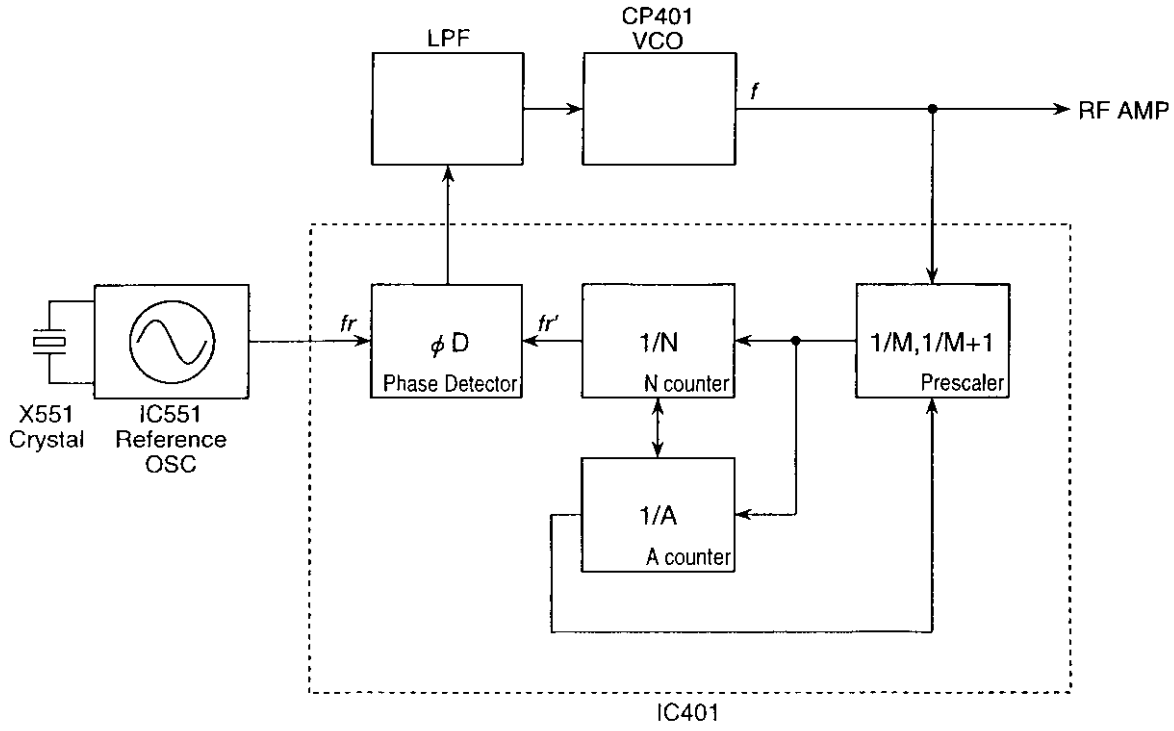
$$fr = fr' \quad \text{---- (2)}$$

by expression of (1), (2)

$$f = (MN+A)fr \quad \text{---- (3)}$$

4. Therefore transmitting frequency[f] is determined by [M], [N], [A], [fr] and stability is decided by stability of reference frequency[fr].

5. Stability of the reference frequency[fr] is ±35ppm(by stability of X'tal(X551) spec). So stability of transmitting frequency[f] is ±50ppm(0.005%).

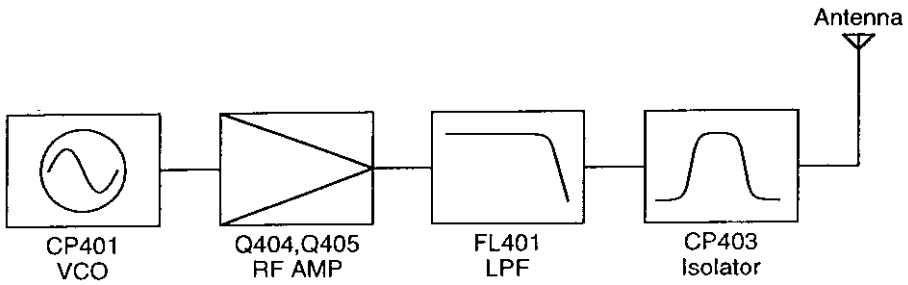


(d)-(11)A description of circuits for suppression of spurious radiation:

1. Radiation of higher harmonics are suppressed by installation of low pass filter and isolator in the next to a RF AMP.

2. By introducing direct oscillation system of transmitting frequency by the VCO, RF AMP are straightly amplified. So there is no spurious caused by frequency multiplier.

3. Shield of the VCO and the RF AMP block suppress spurious emission radiated from the transmitter chassis.



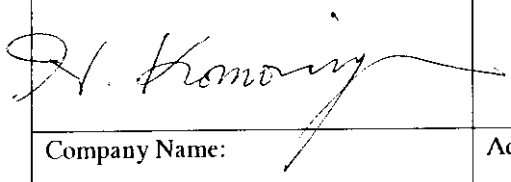
(c) Report of Measurement

-- Under FCC Rules and Regulations Parts 2 and 74 --

Report Date : February 1, 1999

Manufacturer:	Sony Corporation
Manufacturer's Address:	7-35 Kitashinagawa 6-chome Shinagawa-ku, Tokyo, 141 JAPAN
Trade Name:	SONY
Model Number:	WRT-808A(66) (FCC ID: AK8WRT808A66)
Commodity:	UHF SYNTHESIZED TRANSMITTER
Test Method:	All Measurements were performed in accordance with the applicable sections in FCC Rules and Regulations Part 2 and 74.

I hereby state that the measurements shown in this report were made in accordance with the procedures indicated. I assume full responsibility for the accuracy of these measurements and vouch for the qualifications of all persons taking them.

Signed by: for 	Name (Print): K. Nakayama	Title: Manager, Product Safety Quality Assurance Department Broadcasting & Professional Systems Company
Company Name: Sony Corporation	Address: 7-35 Kitashinagawa 6-chome Shinagawa-ku, Tokyo 141, Japan	

2.1046 RF power output (The effective radiated power output)

A. Measurement procedure

1. The measurement shall be made on an open field test site which is free from reflecting objects that may affect the measurement results.

2. For radiated power output of the equipment, the measuring antenna was raised and lowered to obtain a maximum reading on the spectrum analyzer with the antenna vertically and horizontally polarized. The turntable was rotated a minimum of 360° to further increase the reading on the spectrum analyzer. Then field strength was recorded in dBμV/m.

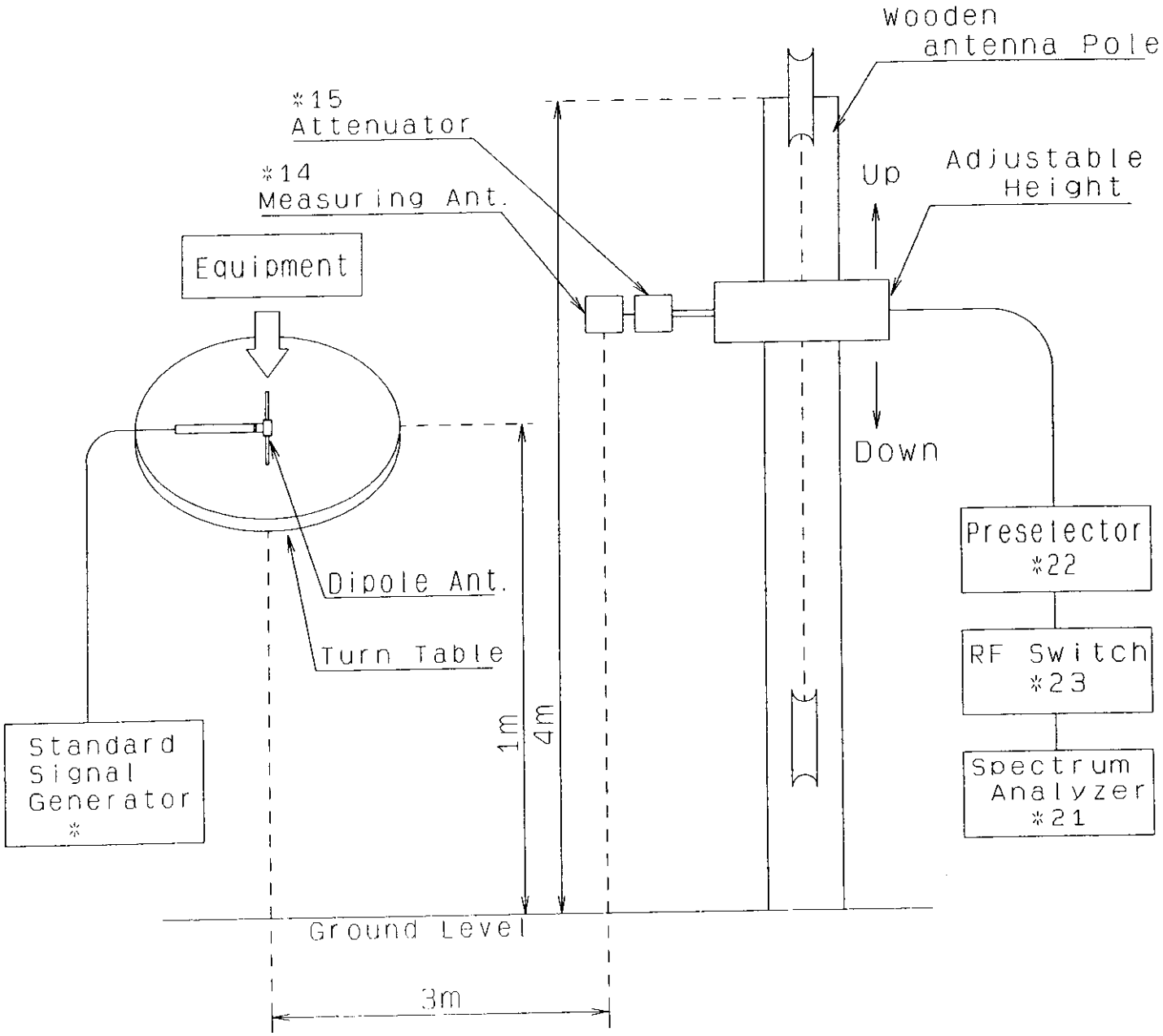
3. The unit was removed and replaced with a dipole antenna. (The antenna was adjusted to a half-wave of transmitting frequency.) The center of the dipole antenna was placed approximately at the same location as the center of the unit.

4. The dipole antenna at the unit end was connected to a signal generator with a coaxial cable. With the antennas at both ends vertically and horizontally polarized and signal generator tuned to the transmitting frequency, the level of the signal generator output was adjusted to the previously recorded maximum reading for this set of conditions was obtained.

5. The input power into the dipole antenna was calculated from the coaxial cable loss and the signal generator output voltage obtained in these readings.

For the measured data, refer to Page 34.

For the setup, refer to the diagram below.



Measuring site

Distance between Antenna	---- 3 meters
Location	---- Atsugi Technology Center, Kanagawa, Japan

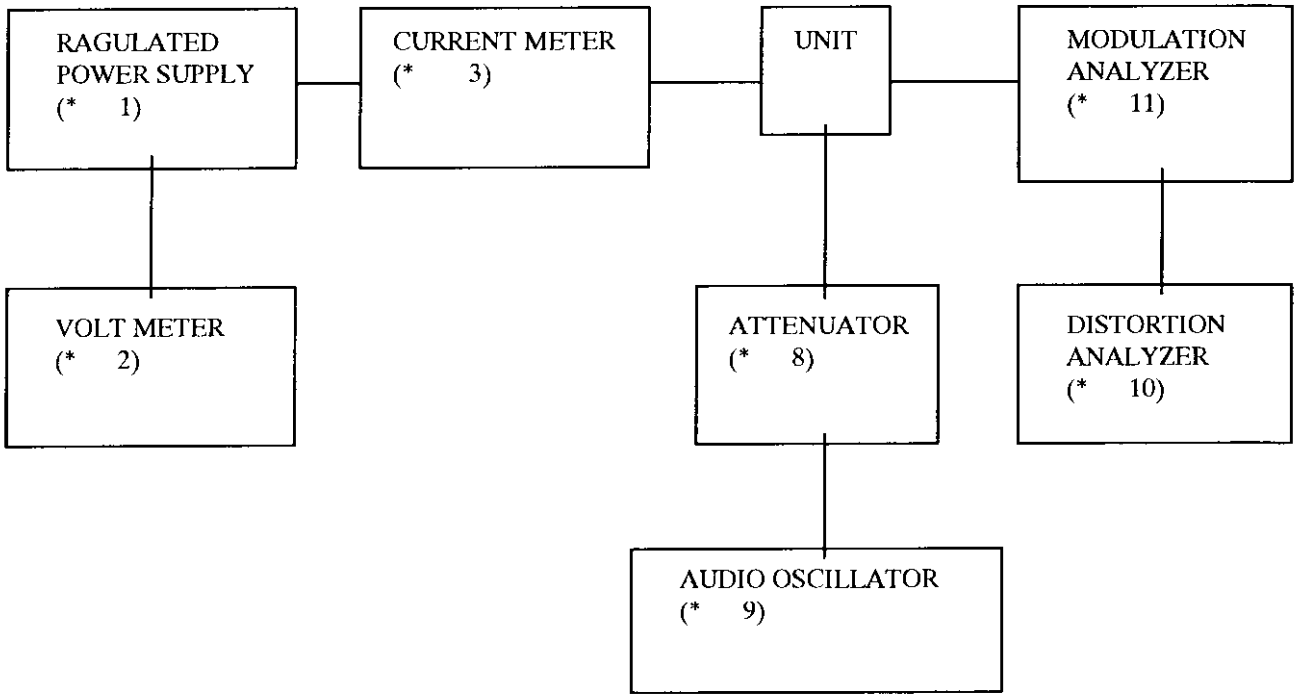
B. For the measured data, refer to Page 34.

2.1047 Modulation characteristics

A Measurement procedure

The test signal was applied to the audio input terminal of the transmitter.
A Modulation analyzer was connected to the output terminals of the transmitter.
The test signal frequency was swept from 50 Hz to 15 kHz.

For the test set-up, refer to the diagram below.



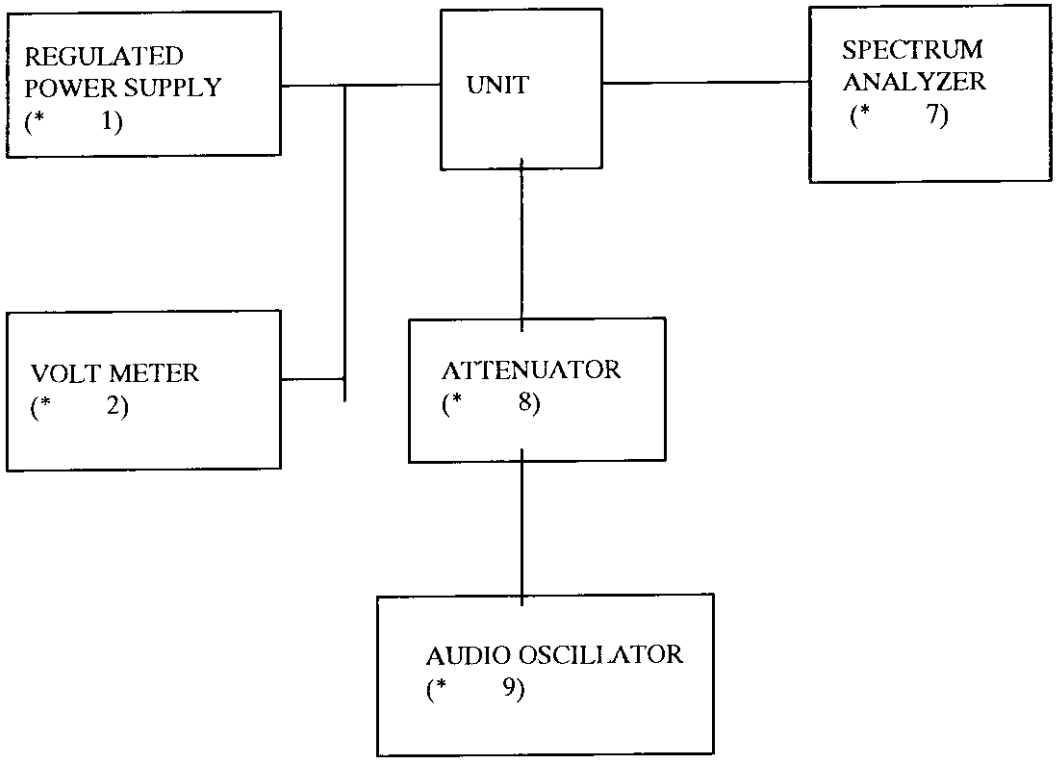
For the measured data, refer to Page 35 - 37.

2.1049 Occupied bandwidth

A. Measurement procedure

Manufacturer's necessary bandwidth is 110KHz.
A spectrum analyzer was connected to the output terminals.
The unit was modulated by a 15kHz tone of sufficient level to produce at least 85 percent modulation.
The occupied bandwidth was measured with the spectrum analyzer set at 50KHz/div. scan and 10dB/div.

For the test set-up, refer to the diagram below.



For the measured data, refer to Page 38 - 39.

2.1051 Spurious emissions at antenna terminals

A. Measurement procedure

The conducted spurious test is not applicable because this device has a fixed antenna (not removable).

2.1053 Field strength of spurious radiation

A-1. Measurement procedure (from lowest frequency to 1000MHz)

1. The measurement shall be made on an open field test site which is free from reflecting objects that may affect the measurement results.

2. This procedure was intended to determine the level of spurious emission radiated from the antenna and the unit chassis. The radio frequency spectrum was scanned from lowest frequency generated in the equipment to 1000MHz.

3. For each spurious or harmonic measurement, the measuring antenna was adjusted to the correct length for the frequency involved. This length was made from the lowest frequency generated in the equipment to 1000MHz.

4. For each frequency generated in the equipment, the measuring antenna was raised and lowered to obtain a maximum reading on the spectrum analyzer with the antenna vertically polarized. The turntable was rotated a minimum of 360° to further increase the reading on the spectrum analyzer. Then field strength was recorded in dBμV/m.

5. The unit was removed and replaced with a dipole antenna. (The antenna was adjusted to a half-wave of transmitting frequency.) The center of the dipole antenna was placed approximately at the same location as the center of the unit.

6. The dipole antenna at the unit end was fed with a signal generator. With the antennas at both ends vertically polarized and signal generator tuned to the transmitting frequency, the level of the signal generator output was adjusted to the previously recorded maximum reading for this set of conditions was obtained.

7. The entire procedure for each spurious and harmonics frequency with the FSM antenna horizontally polarized was repeated.

8. The input power into the dipole antenna was calculated from the impedance and the signal generator voltage obtained in these readings.

For the measured data, refer to the page 40 - 41.

2.1053 Field strength of spurious radiation

A-2 Measurement procedure (from 1GHz to 10 GHz)

1. The measurement shall be made on an open field which is free from reflecting objects that may affect the measurement results.

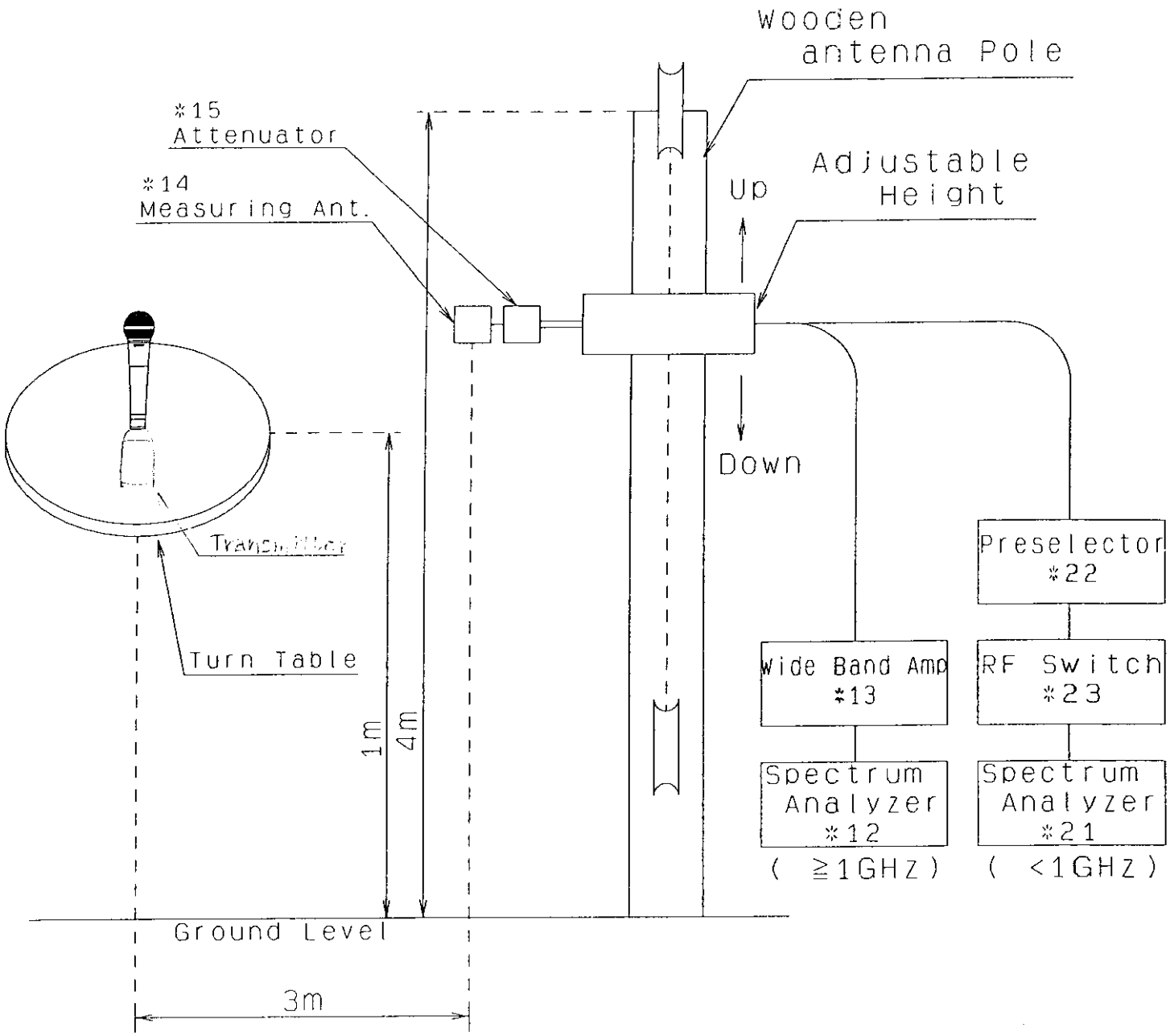
2. This procedure was intended to determine the level of spurious emission radiated from the antenna and the unit chassis. The radio frequency spectrum was scanned from 1GHz frequency generated in the equipment to 10GHz.

3. For each spurious or harmonic measurement, the measuring antenna was changed according to frequency range.

4. For each frequency generated in the equipment, the measuring antenna was raised and lowered to obtain a maximum reading on the spectrum analyzer with the antenna vertically polarized. The turntable was rotated a minimum of 360° to further increase the reading on the spectrum analyzer. Then field strength was recorded in dBμV/m.

For the measured data, refer to the page 40 - 41.

For the setup, refer to the diagram below.



Measuring site

Distance between Antenna	---- 3 meters
Location	---- Atsugi Technology Center, Kanagawa, Japan

For the measured data, refer to Page 40 - 41.

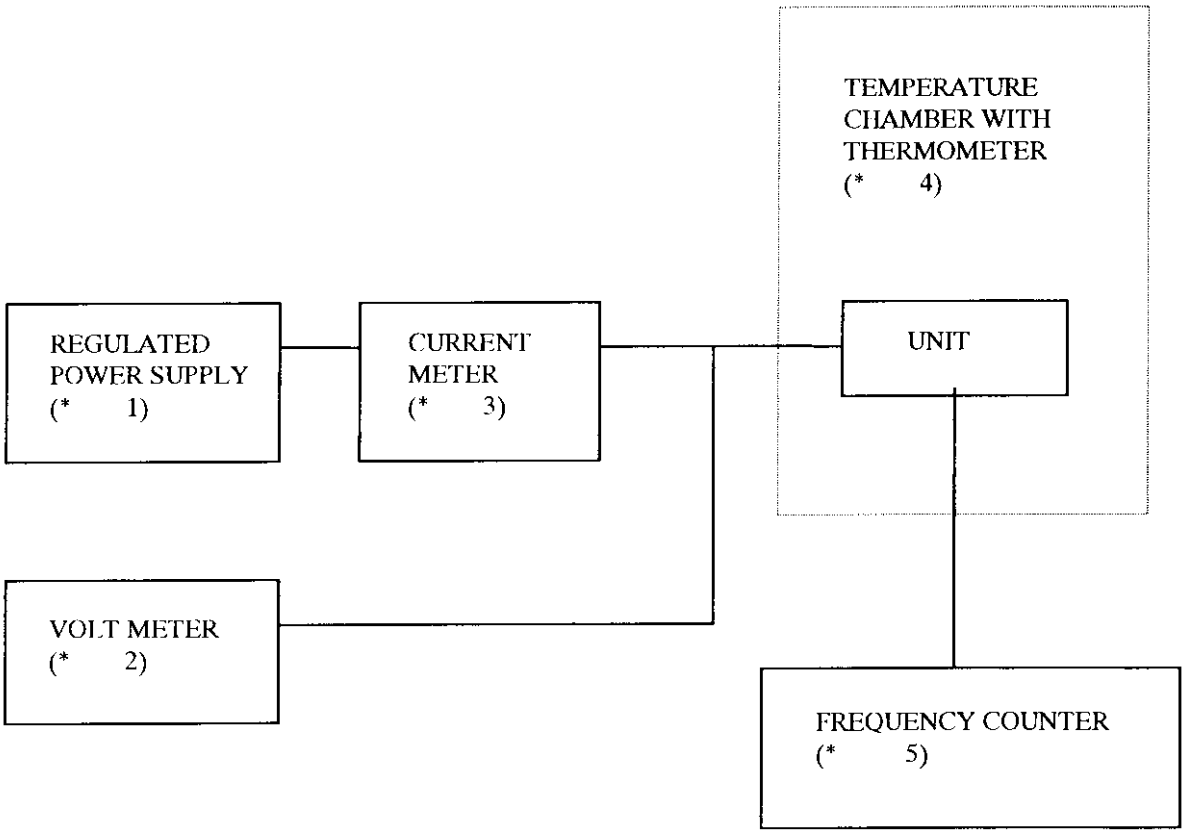
2.1055 Frequency stability

(1) Frequency vs. Ambient temperature

A. Measurement procedure

The unit was placed in the temperature cycle chamber and was kept at a temperature of -30° ±1° for 1 hour. The rated test voltage was applied for two minutes. The transmitting frequency was measured during this period and recorded. A similar measurement was performed with the temperatures changed 10℃ each time up to maximum of 50℃.

For the test setup, refer to the diagram below.



For the measured data, refer to the Page 43 - 44.

2.1055 Frequency stability

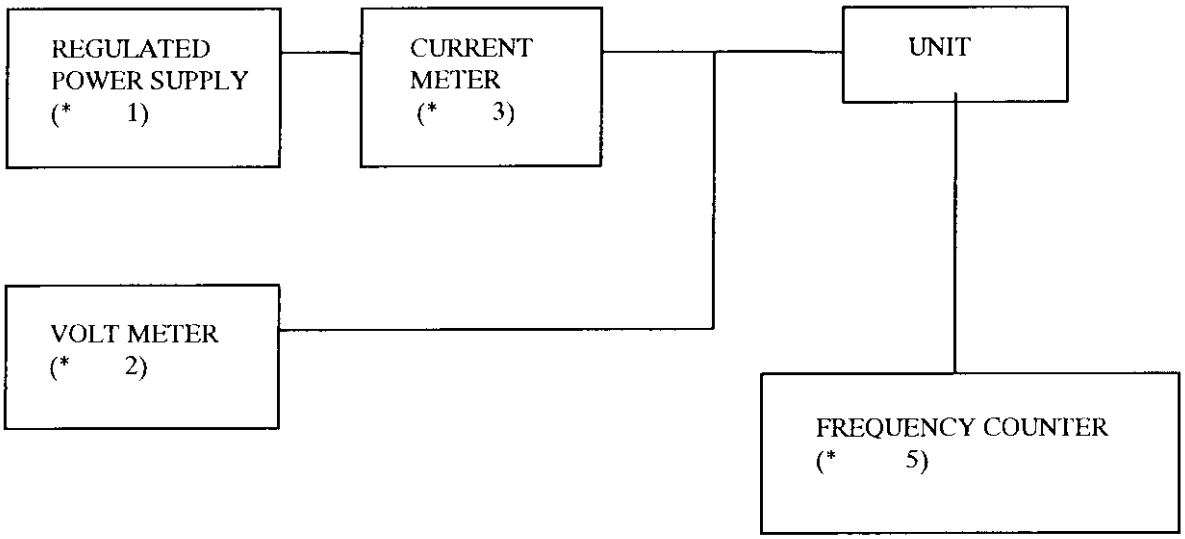
(2) Frequency vs. Supply voltage

A. Measurement procedure

The power supply voltage to the unit under test is varied from 2.0V to 1.725V.

Nominal Value	3.00 V
85% of the nominal value	2.55 V
115% of the nominal value	3.45 V
Battery operating end point which shall be specified by the manufacturer	1.90 V

For the test setup, refer to the diagram below.



For the measured data, refer to the Page 43 _ 44.

2.1046 RF power output (The effective radiated power output)

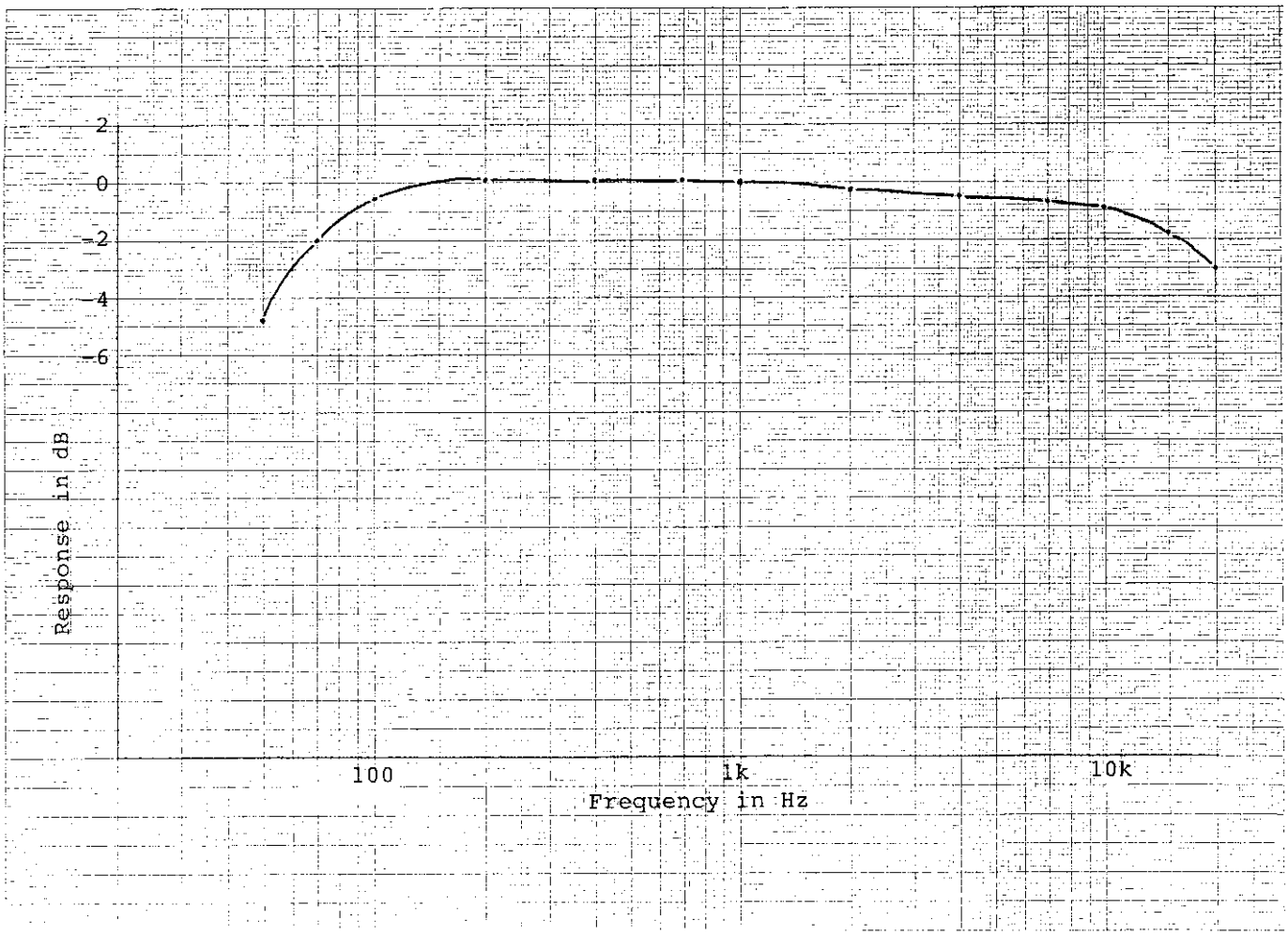
Model: WRT-808A(66)
FCC ID: AK8WRT808A66
POWER SUPPLY: 3.00V DC

Frequency (MHz)	CH No.	ERP (mW)
782.125	66-01	5.6
788.125	67-01	5.8
793.875	67-47	5.2

2.1047 Modulation characteristics

Mudulation Frequency Response

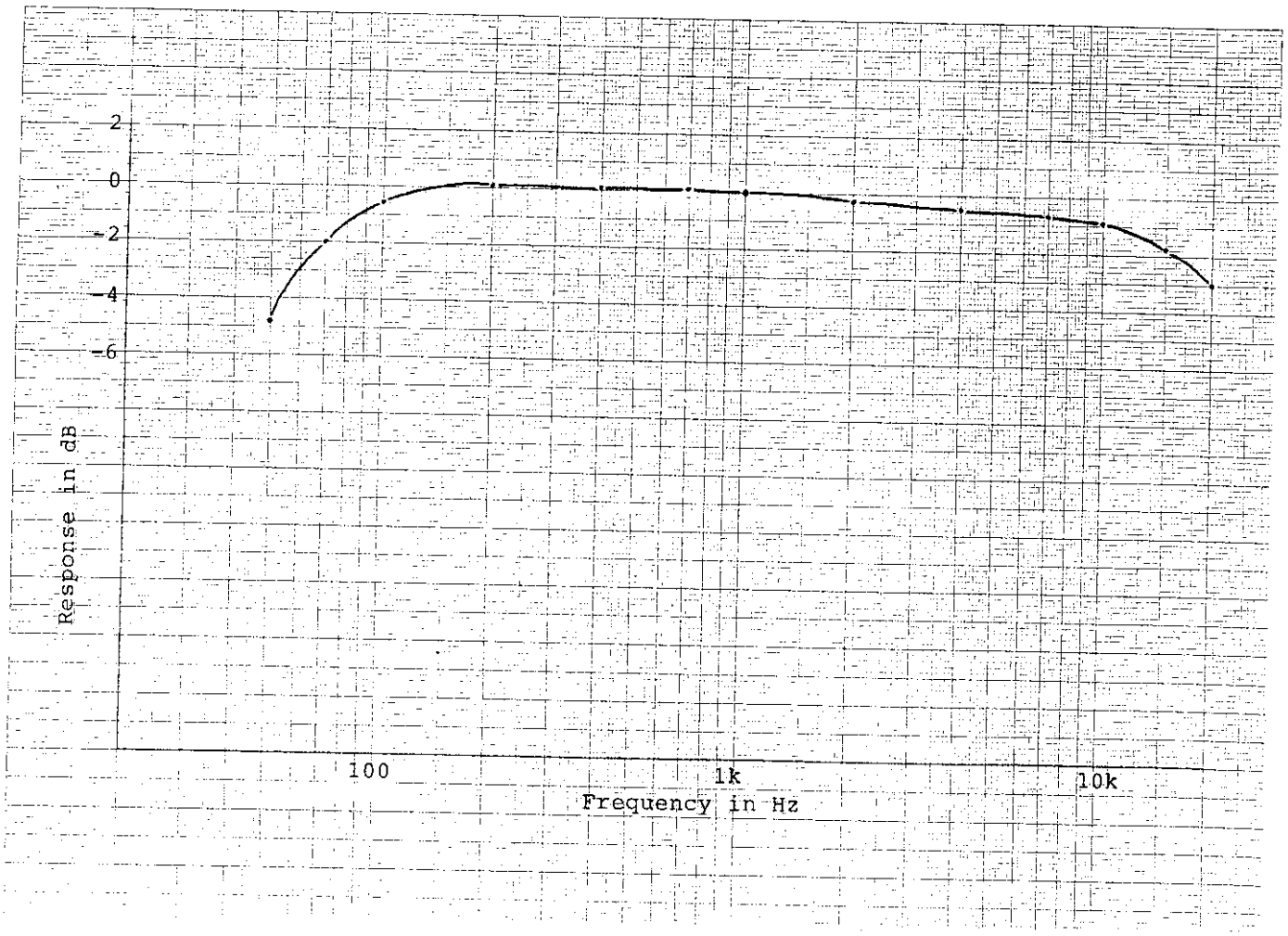
Model:	WRT-808A(66)
FCC ID:	AK8WRT808A66
Transmitting Freq.:	782.125MHz (CH No. 66-01)



2.1047 Modulation characteristics

Mudulation Frequency Response

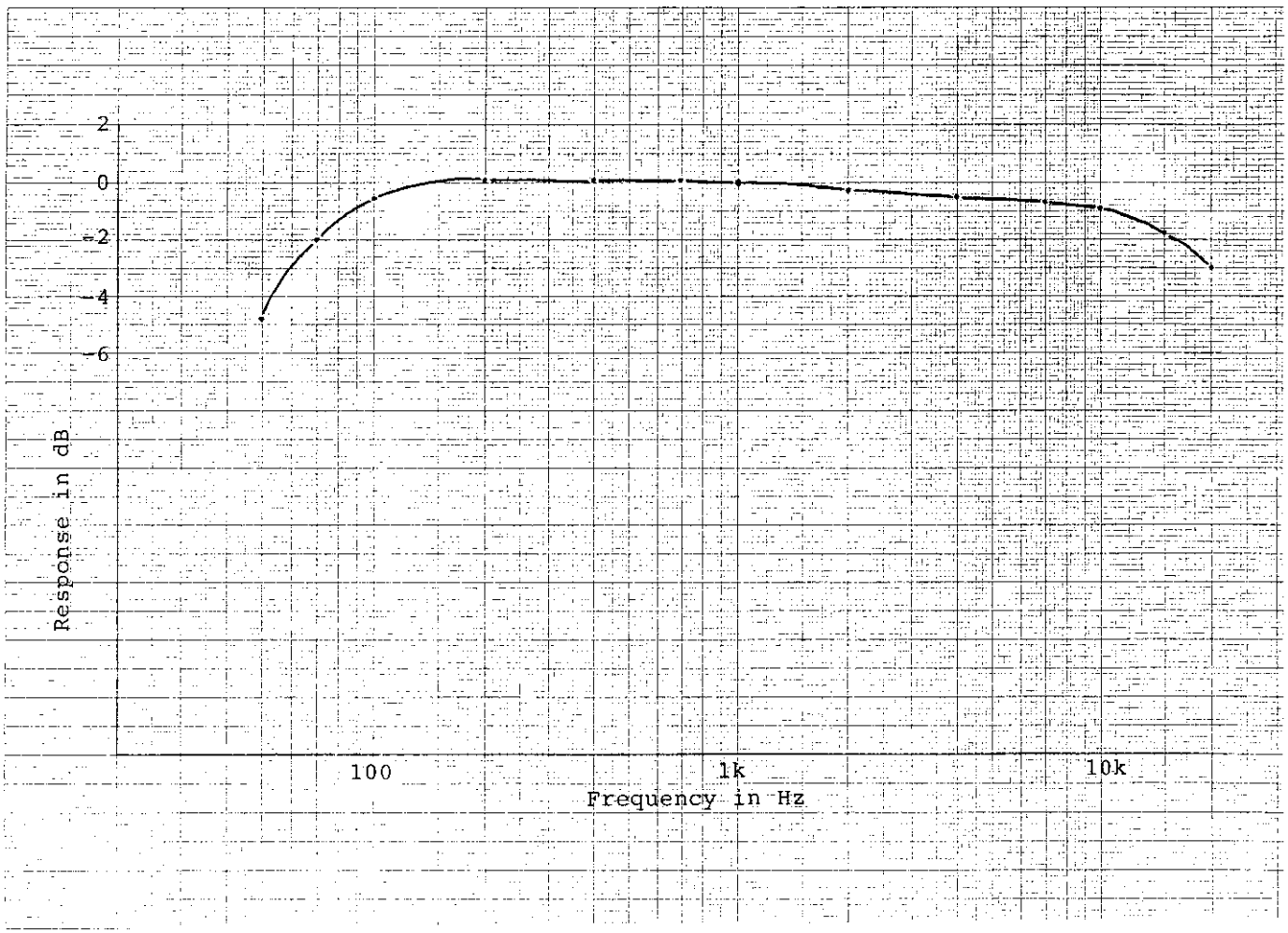
Model:	WRT-808A(66)
FCC ID:	AK8WRT808A66
Transmitting Freq.:	788.125MHz (CH No. 67-01)



2.1047 Modulation characteristics

Mudulation Frequency Response

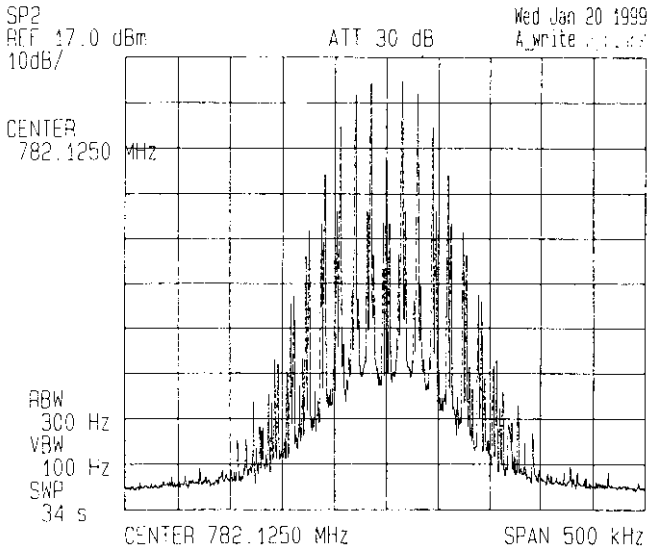
Model:	WRT-808A(66)
FCC ID:	AK8WRT808A66
Transmitting Freq.:	793.875MHz (CH No. 67-47)



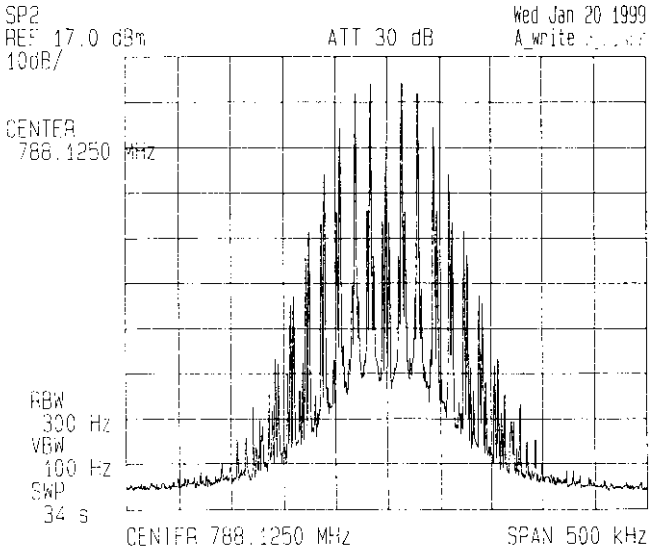
2.1049 Occupied bandwidth

Model: WRT-808A(66)
FCC ID: AK8WRT808A66

Center Frequency
782.125 MHz (CH No. 66-01)
Modulating frequency: 15kHz
Input Level: -53dB(0dB=1Vrms)



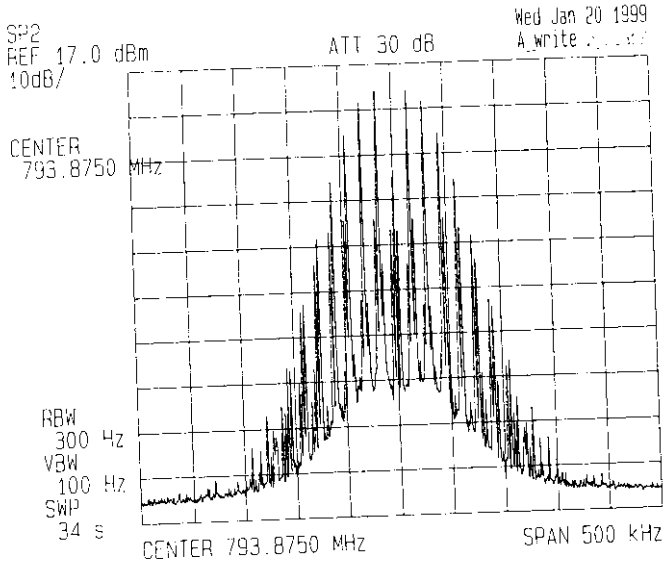
Center Frequency
788.125MHz (CH No. 67-01)



2.1049 Occupied bandwidth

Model: WRT-808A(66)
FCC ID: AK8WRT808A66

Center Frequency
793.875MHz (CH No. 67-47)



2.1053 Field strength of spurious radiation

Model: WRT-808A(66)
FCC ID: AK8WRT808A66

Frequency: 782.125MHz (CH No. 66-01)
Power supply: AA size battery x 2 3.0V

Frequency (MHz)	Field strength (dBμV/m)
** 782.125	108.50 (* 0.0)
1564.250	60.50 (- 48.0)
2346.375	60.20 (- 48.3)
3128.500	63.20 (- 45.3)
4692.750	63.30 (- 45.2)
5474.875	60.30 (- 48.2)
6257.000	70.00 (- 38.5)
7039.125	65.90 (- 42.6)
7821.250	65.80 (- 42.7)

Frequency: 788.125MHz (CH No. 67-01)
Power supply: AA size battery x 2 3.0V

Frequency (MHz)	Field strength (dBμV/m)
** 788.125	107.30 (* 0.0)
1576.250	62.90 (- 44.4)
2364.375	62.40 (- 44.9)
3152.500	61.90 (- 45.4)
3940.625	58.00 (- 49.3)
4728.750	64.50 (- 42.8)
5516.875	61.50 (- 45.8)
6305.000	67.90 (- 39.4)
7903.125	66.60 (- 40.7)
7881.250	66.60 (- 40.7)

Note: * In parenthesis figure shows spurious and harmonic emission level.
Unit: dB (0dB = carrier level)
** Carrier frequency

2.1053 Field strength of spurious radiation

Model: WRT-808A(66)
FCC ID: AK8WRT808A66

Frequency: 793.875MHz (CH No. 67-47)
Power supply: AA size battery x 2 3.0V

Frequency (MHz)	Field strength (dBμV/m)	
** 793.875	106.80	(* 0.0)
1587.750	61.70	(- 45.1)
2381.625	61.20	(- 45.6)
3175.500	60.80	(- 46.0)
3969.375	58.10	(- 48.7)
4763.250	66.20	(- 40.6)
5557.125	61.30	(- 45.5)
6351.000	65.60	(- 41.2)
7144.875	66.50	(- 40.3)
7938.750	66.40	(- 40.4)

Note: * In parenthesis figure shows spurious and harmonic emission level.
Unit: dB (0dB = carrier level)
** Carrier frequency

Method of Calculating Field Strength

1. "Substitution Method" is employed in case that reading of spectrum analyzer is extremely higher than the noise level.

   Field Strength [dBμV/m] = S.S.G. Output Level [dBμV/m] (at 50Ω)
   + Balun Loss of Reception Antenna [dB]
   + Antenna Factor [dB]

2. Following calculation is employed in case that S.S.G. is not employed.

   Field Strength [dBμV/m] = Meter Reading [dBμV]
   + Antenna Factor (including Balun Loss) [dB]
   + Cable Loss + 20log(3m/10m) [dB]

2.1055 Frequency stability

Nominal frequency : 782.125MHz (CH No. 66-01)				
Power supply	Frequency stability (%)			
Ambient temperature(℃)	1.900V DC	2.550 V DC	3.000V DC	3.450V DC
-30	-0.00171	-0.00171	-0.00171	-0.00171
-20	-0.00094	-0.00094	-0.00094	-0.00094
-10	-0.00039	-0.00039	-0.00039	-0.00039
0	-0.00008	-0.00008	-0.00008	-0.00008
10	0.00006	0.00006	0.00006	0.00006
20	0.00007	0.00007	0.00007	0.00007
30	0.00004	0.00004	0.00004	0.00004
40	-0.00003	-0.00003	-0.00003	-0.00003
50	-0.00003	-0.00003	-0.00003	-0.00003

Nominal frequency : 788.125MHz (CH No. 67-01)				
Power supply	Frequency stability (%)			
Ambient temperature(℃)	1.900V DC	2.550 V DC	3.000V DC	3.450V DC
-30	-0.00171	-0.00171	-0.00171	-0.00171
-20	-0.00094	-0.00094	-0.00094	-0.00094
-10	-0.00039	-0.00039	-0.00039	-0.00039
0	-0.00008	-0.00008	-0.00008	-0.00008
10	0.00006	0.00006	0.00006	0.00006
20	0.00007	0.00007	0.00007	0.00007
30	0.00004	0.00004	0.00004	0.00004
40	-0.00003	-0.00003	-0.00003	-0.00003
50	-0.00003	-0.00003	-0.00003	-0.00003

2.1055 Frequency stability

Nominal frequency : 793.875MHz (CH No. 67-47)

Power supply	Frequency stability (%)			
Ambient temperature(℃)	1.900V DC	2.550 V DC	3.000V DC	3.450V DC
-30	-0.00171	-0.00171	-0.00171	-0.00171
-20	-0.00094	-0.00094	-0.00094	-0.00094
-10	-0.00039	-0.00039	-0.00039	-0.00039
0	-0.00008	-0.00008	-0.00008	-0.00008
10	0.00006	0.00006	0.00006	0.00006
20	0.00007	0.00007	0.00007	0.00007
30	0.00004	0.00004	0.00004	0.00004
40	-0.00003	-0.00003	-0.00003	-0.00003
50	-0.00003	-0.00003	-0.00003	-0.00003

List of Test Equipment

Equipment	Manufacturer	Type	Serial No.
*1 Regulated Power supply	TAKASAGO	NL035-5	9820333
*2 Volt Meter	Yokogawa	2051	10497U
*3 Current Meter	Yokogawa	2051	11384U
*4 Temperature Chamber	Tabai	PL-1	2223871
*5 Frequency Counter	Anritsu	MF76A	MT59216
*6 Power Meter Power Sensor	Hewlett Packard Hewlett Packard	435B 8482A	2445A11826 2349A10440
*7 Spectrum Analyzer	ADVANTEST	R3371A	5863D14
*8 Attenuator	Anritsu	MN-32A	M42522
*9 Audio Oscillator	Matsushita	VP-722A	529059
*10 Distortion Analyzer	Hewlett Packard	334A	1140A09384
*11 Modulation Analyzer	Hewlett Packard	8901A	1922A00235
*12 Spectrum Analyzer	ADVANTEST	R3265	15060251
*13 Wide Band Amplifier	Anritsu	A4H1002S	-
*14 Horn Antenna Log-Periodic Antenna	SCHWARZBECK SCHWARZBECK	BBHA 9120-B UHALP9107	102/93 -
*15 3dB Attenuator	Hewlett Packard	8491B	2708A
*21 Spectrum Analyzer	ADVANTEST	TR4172	60690030
*22 Preselector	ADVANTEST	TR14307	68360004
*23 RF Switch	ADVANTEST	TR14308	8604004
*24 Standard Signal Generator	Anritsu	MG645B1	M54866