JAPAN QUALITY ASSURANCE ORGANIZATION
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REPORT OF MEASUREMENTS

Date : March 25, 1999
Issue in :Yamanashi, Japan

JQA APPLICATION NO.: 85-80939

1. Applicant	: ALPS ELECTRIC CO., LTD. MECHATRONIC DEVICES DIVISION 2 230, Shibue, Wakuya-cho, Toda-gun Miyagi-ken 987-0195, Japan
2. Manufacturer	: ALPS ELECTRIC CO., LTD. MECHATRONIC DEVICES DIVISION 2 230, Shibue, Wakuya-cho, Toda-gun Miyagi-ken 987-0195, Japan
3. Description of Equipment	: REMOTE CONTROL UNIT
a) FCC ID	: CWTJR03005
b) Trade Name	: -
c) Model No.	: SBJR03005
d) Operating Frequency	: 430 MHz
e) Power Supply	: 3 VDC
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 8, 1999
7. Total Pages of This Report	: 12 (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.

M. Takahashi

Masaaki Takahashi Director
Tsuru Branch
JQA EMC Engineering Dept.

1. Transmitter Fundamental and Spurious Emission: [§15.231(b)]

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 down 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. And also, each emission was to be maximized by changing the orientation of the transmitter under test. The device was tested three orthogonal planes.
These measurements were repeated with the receiving antenna polarized vertically.
In this measurements, in order to determining the average value during a 100 ms interval of the maximum radiated power generated from the transmitter under test, the encoded waveform in the time domain was used, details of which was illustrated in the attached sheet.

Measurement Results:
Operating Frequency : 430 MHz
Distance of Measurement : 3.0 meters

Frequency (MHz)	Antenna Factor (dB)	Amp. Gain (dB)	Meter Reading Horiz. (dB/uV)	Meter Reading Vert. (dB/uV)	Factor* (dB)	Field Strength Horiz. (uV/m)	Field Strength Vert. (uV/m)
Fundamental							
430	25.0	-	51.0	51.1	-17.1	881.0	891.2
Harmonic Frequency							
860	32.9	-	19.8	23.3	-17.1	60.3	90.2
1290	28.1	48.1	43.1	46.8	-17.1	2.0	3.1
1720	31.9	48.3	37.8	37.1	-17.1	1.6	1.5
2150	33.3	42.1	<30.0	<30.0	-17.1	< 1.6	< 1.6
2580	35.5	42.3	36.0	35.4	-17.1	4.0	3.8
3010	37.3	42.4	<30.0	<30.0	-17.1	< 2.5	< 2.5
3440	38.9	42.5	<30.0	<30.0	-17.1	< 2.9	< 2.9
3870	40.3	42.7	<30.0	<30.0	-17.1	< 3.3	< 3.3
4300	41.7	42.8	<30.0	<30.0	-17.1	< 3.9	< 3.9

Note: 1. The spectrum was checked from 30 MHz to tenth harmonics. 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 included in the antenna factor.

4. Sample calculation :

at 430 MHz

$$10^{(AF+Mr+F)/20} = 10^{(25.0+51.0-17.1)/20} = 881.0 \text{ uV/m}$$

Where,

Af = Antenna Factor including the cable loss.
Mr = Meter Reading
F = Peak to Average factor

5. "*": The factor due to the pulsed waveform as shown in the attached sheets.

6. Measuring Instrument Setting:

Field Strength Meter:(<1000 MHz)

Detector function : Peak
IF Bandwidth : 120 kHz

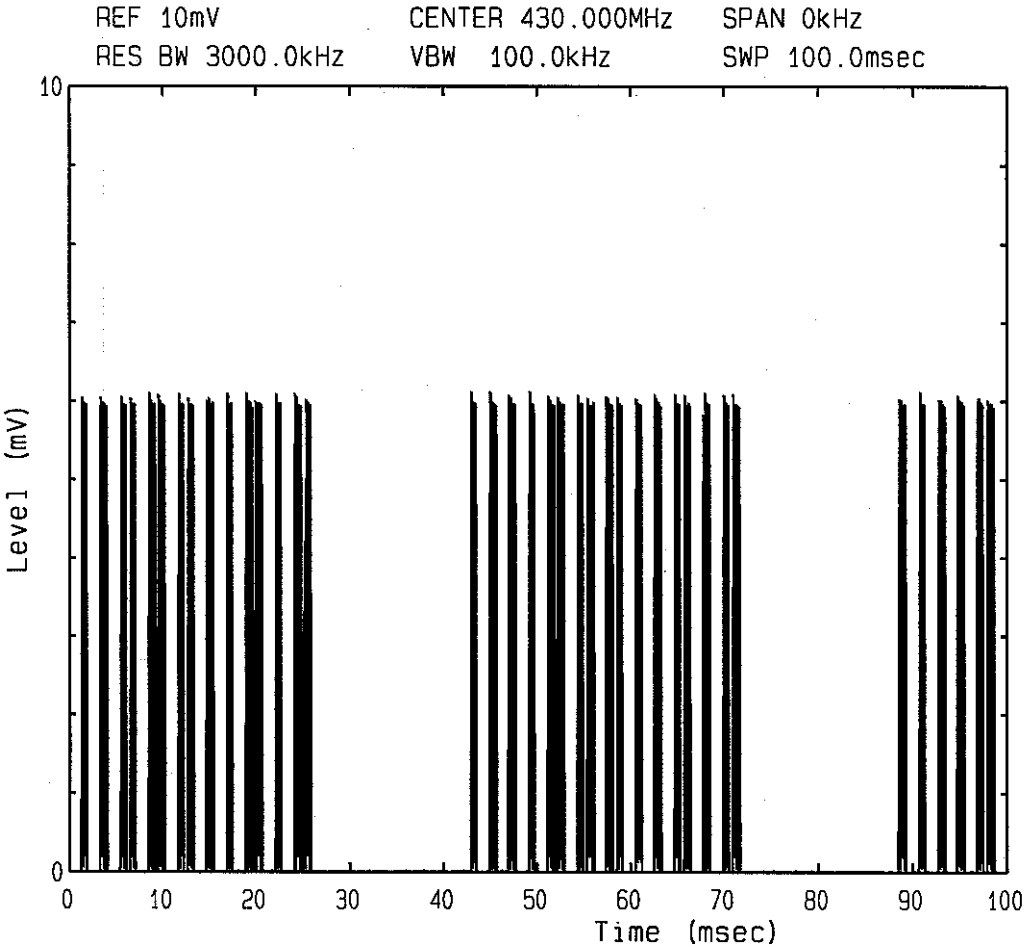
Spectrum Analyzer:(>1000 MHz)

Resolution Bandwidth : 1 MHz

The encoded waveform in the time domain

FCC ID : CWTJR03005
Model : SBJR03005

Mode of EUT : Transmit

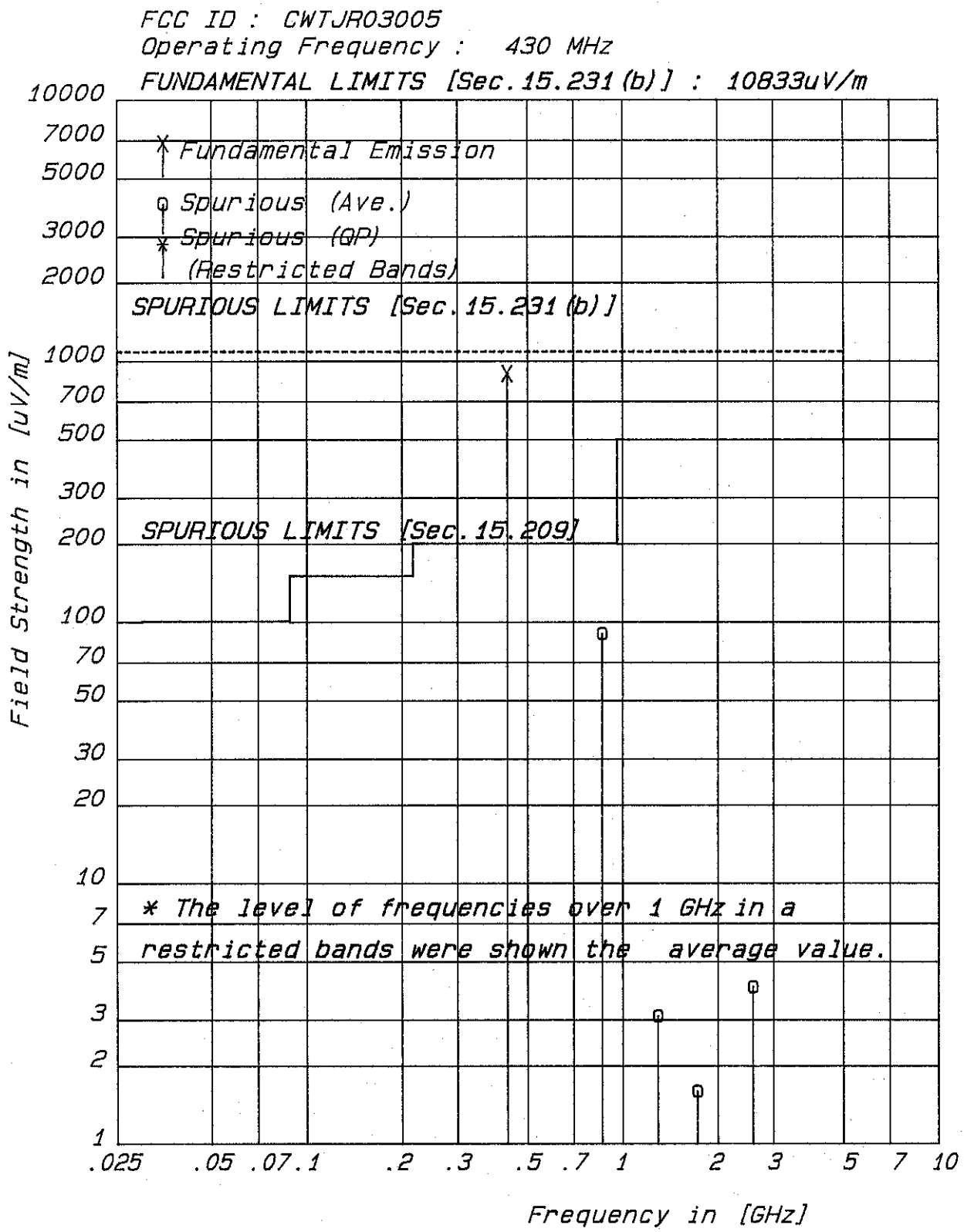


The above waveform indicates the case when field stength averaged over 100 milliseconds was maximum value.
In order to obtain the peak to average factor, calculation of the period of total on-time was computed by personal computer. Results was obtaind by following.

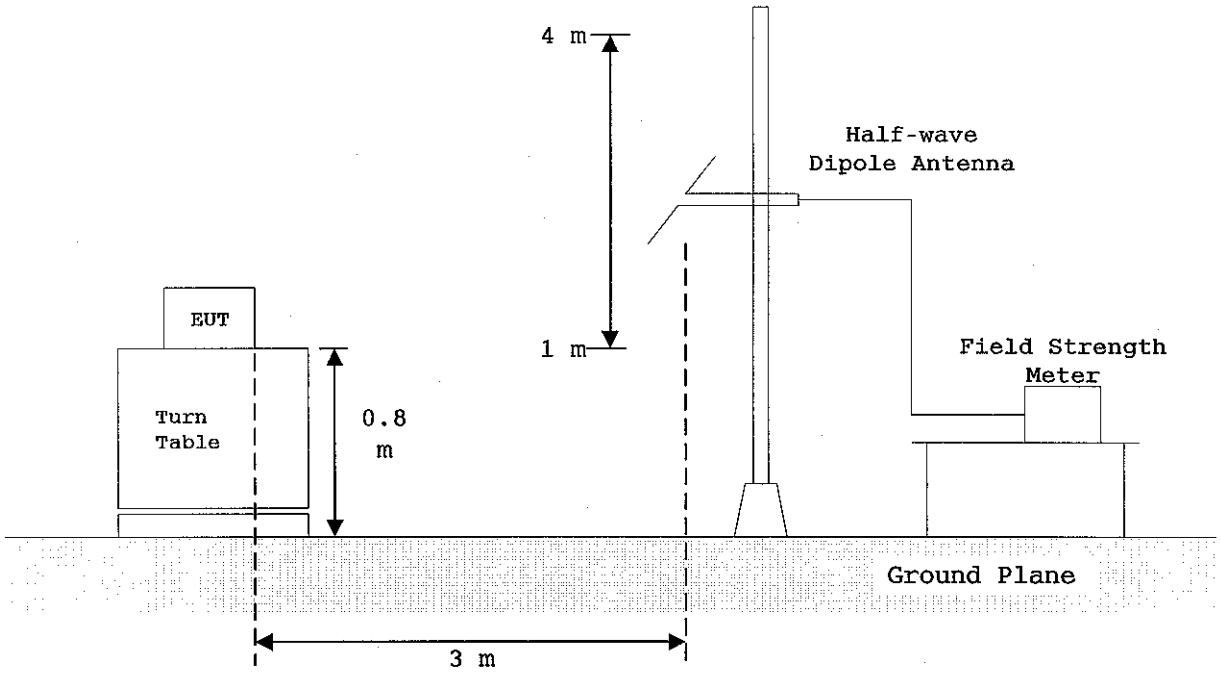
Duty cycle = (Maximum total on-time / 100 msec) x 100
= (13.9 msec / 100 msec) x 100 = 13.9 %

Therefore
Factor is 20log(0.1390) = -17.1 dB

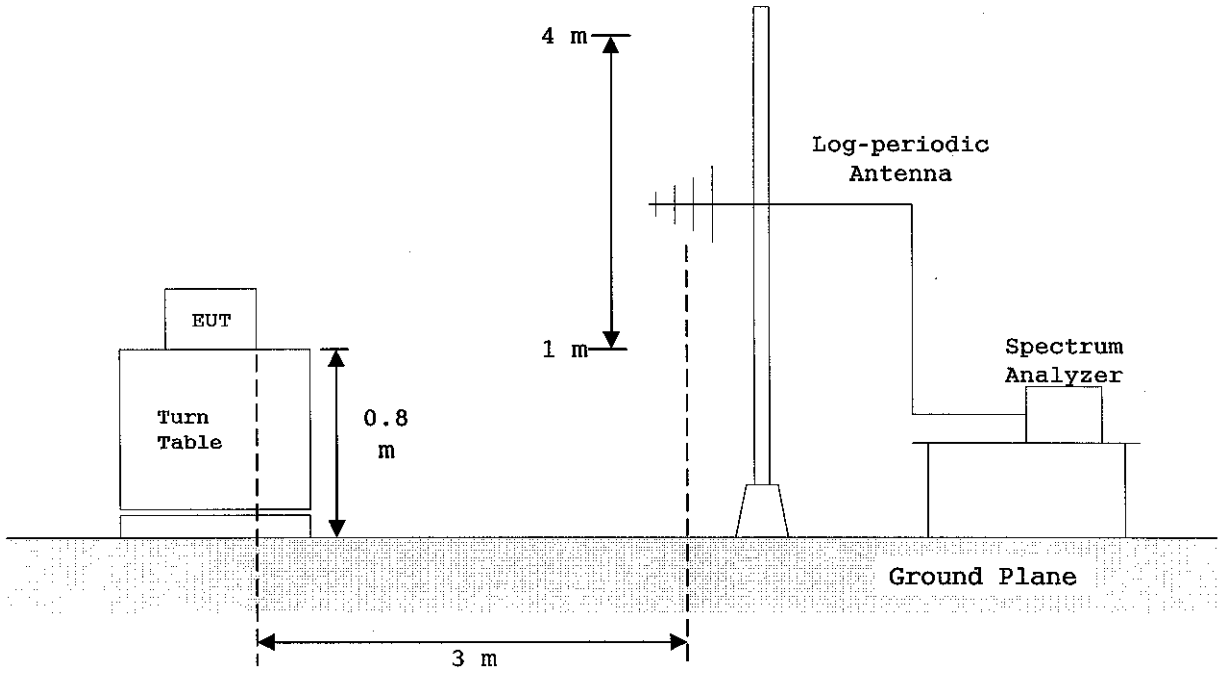
Radiated Fundamental & Spurious Emissions



MESUREMENT SET-UP FOR UP TO 1 GHz



MESUREMENT SET-UP FOR ABOVE 1 GHz



Horizontal Plane

Vertical Plane

2. 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.

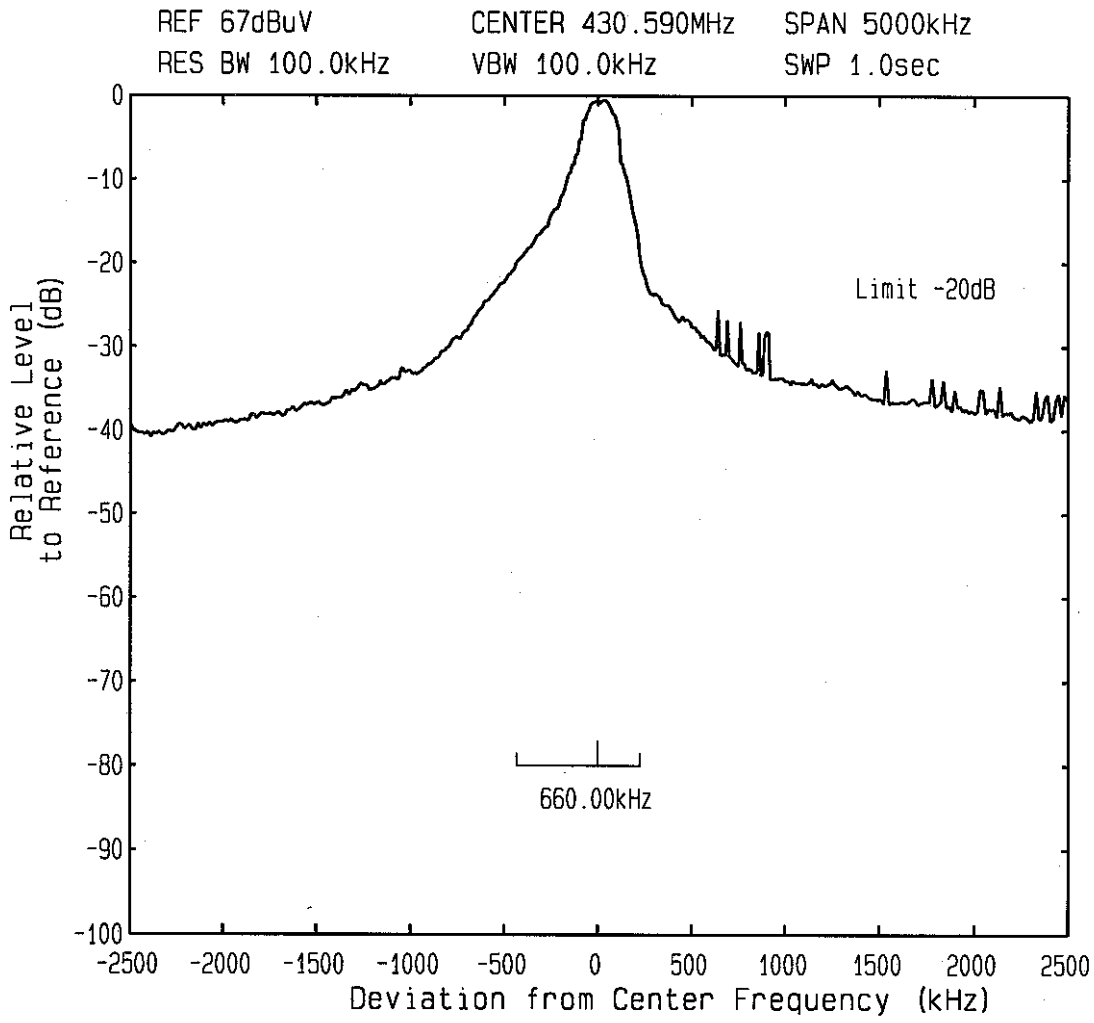
Measurements Results :
Specified Limits: 0.25 % of the Fundamental Frequency
430 MHz x 0.0025 = 1075.0 kHz

Refer to the attached graphs.

Emission Limitation

FCC ID : CWTJR03005
Model : SBJR03005

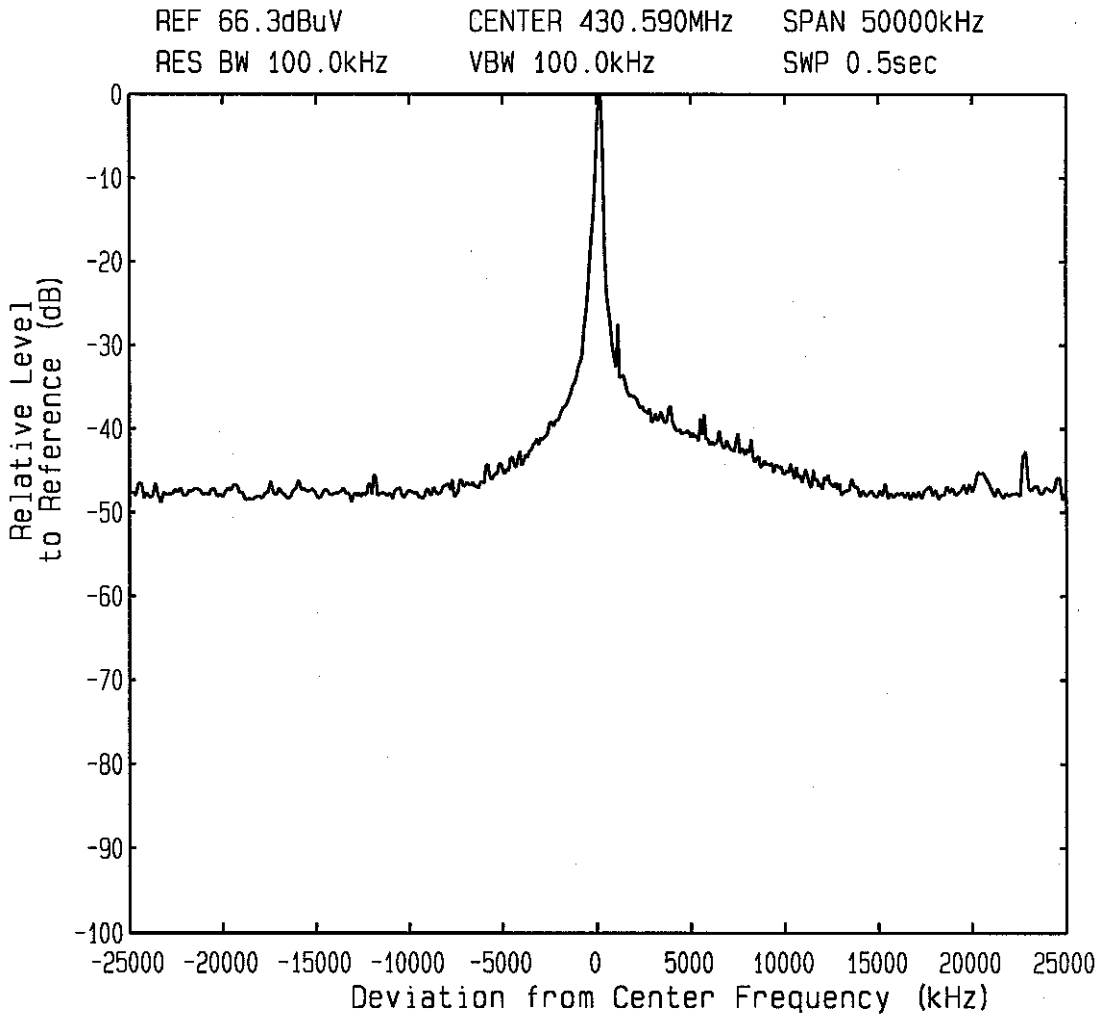
Mode of EUT : Transmit



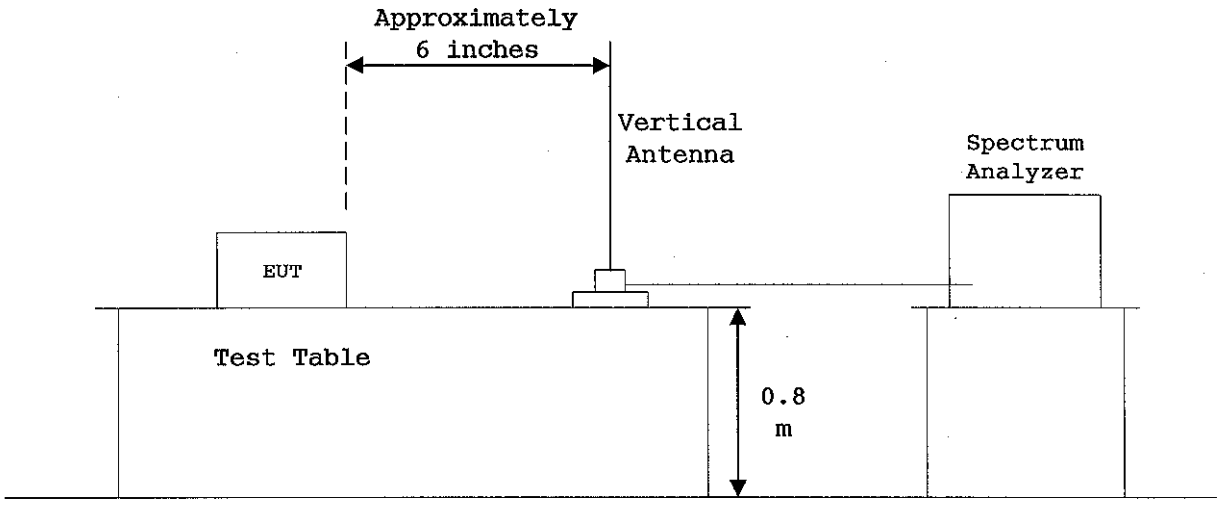
Emission Limitation

FCC ID : CWTJR03005
Model : SBJR03005

Mode of EUT : Transmit



MESUREMENT SET-UP FOR BAND WIDTH



JQA

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FCC ID : CWTJR03005
Sheet 12 of 12 sheets

LIST OF MEASUREMENT EQUIPMENT

Equipment (Model No.)	Manufacturer	Date of Cal.
1. Field Strength Meter		
ESVS10	Rohde & Schwarz	May 1998
2. Spectrum Analyzer		
8566B	Hewlett Packard Inc.	February 1999
3. Tuned Dipole Antenna		
KBA-511	Kyoritsu Electrical Works	October 1998
KBA-611	Kyoritsu Electrical Works	October 1998
4. Vertical Antenna		
91972-2	Stoddard Aircraft Radio Co., Ltd.	-
5. Log-periodic Antenna		
94612-1 / 97062301	NAC CO.	October 1998