Test Report

TEST PROCEDURES AND TEST SITE DESCRIPTION

MEASUREMENT ITEMS	Section No.
5-1 Field Strength of Radiated Emissions	15.249(a)(b) 15.205 / 15.209
5-2 Power Line Conducted Emissions	15.207

SUPPLEMENT DATA - BAND EDGE EMISSIONS

5-1 Field Strength of Radiated Emissions

15.249(a)(b)
15.205 / 15.209

The measurements were performed in accordance with the ANSI C63.4-1992. Field Strength measurements of radiated spurious emissions were made at the open test site of a 3 meter range maintained by Uniden Corporation in Japan. Complete description and measurement data of this test site have been placed on file with the Commission.

The radio frequency spectrum was scanned in the range of 30 MHz to 4 GHz in accordance with the section 15.33(b) of the FCC Rules. The frequency below 1 GHz, the measurement was carried out by using CISPR quasi-peak detector, Advantest R3365A the Spectrum Analyzer in accordance with the sections 15.33(a) and 15.35(a). The frequency above 1 GHz, the measurement was carried out by using the Hewlett Packard 8566B Spectrum Analyzer in accordance with the section 15.35(b).

A bilog antenna CBL6112A was used to cover the range from 30 MHz to 1000 MHz. Narrowband tuned dipole antennas were used over the entire 30 to 1000 MHz range for precision measurements of field strength. Above 1000 MHz, a horn antenna EMCO 3115 was used.

For each spurious or harmonic frequency, the antenna was raised and lowered to obtain a maximum reading on the Spectrum Analyzer with antenna horizontally polarized. Then the turntable, on which the equipment under test was placed, was rotated a minimum of 360 degrees to further increase the reading on the Spectrum Analyzer. This procedure was repeated with the antenna vertically polarized. The equipment under test was placed in its normal operating position on a turntable approximately 1 meter in height.

In order to convert the measured emission levels into field strength in dBuV/m, the actual field strength (Ef) is determined by algebraically adding the measured emission level (Em) and the antenna correction factor (ACF) including the cable loss at the appropriate frequency. Ef [dBuV/m] = Em [dBuV/m] + ACF [dB]

FCC Limits:

a) Fundamental emission: 94 dBuV/m (50,000 uV/m)
b) Spurious emissions:

30 - 88 MHz	40 dBuV/m	(100 uV/m)
88 - 216 MHz	43.5 dBuV/m	(150 uV/m)
216 - 960 MHz	46 dBuV/m	(200 uV/m)
Above 960 MHz	54 dBuV/m	(500 uV/m)

Test Results: Refer to the attached test reports. All emissions not reported were more than 20 dB below the limits.

NOTE:
For measurement of the handset, all of the testing were made with the internal battery that is fully charged.

For measurement of base unit, all of the testing were made with the AC Adapter which connected to a standard voltage source.

5-2 Power Line Conducted Emissions 15.207

The measurements were performed in accordance with the ANSI C63.4-1992. During the measurements, a standard voltage source is fed into the unit under test through a power line impedance stabilization network.

FCC Limits:

The radio frequency voltage that is conducted back into the AC power line on any frequencies within the band from 450kHz to 30MHz shall not exceed 250uV (48 dBuV).

Test Results: Refer to the attached test reports. All emissions not reported were more than 20 dB below the limits.

NOTE:
Regarding the Handset, this FCC requirement is not applicable to it since the Handset is intended to use the battery only.

SUPPLEMENT DATA - BAND EDGE EMISSION

Attached data show the handset's transmission on lowest channel and base unit' s transmission on highest channel.

At the outside of emission bands, those emissions are well reduced against the operational channel frequency of the units.

TEST CONDITIONS:

Modulation : 1000 Hz

Max. Deviation:
+/- 70 kHz Dev. for Handset (900MHz BAND)
+/- 220 kHz Dev. for Base unit (2.4GHz BAND)

5-1 Field Strength of Radiated Emissions (Test Result)

a) Handset: Fundamental Emissions

Emission (MHz)	FSM Reading (dBuV)	Amplifier Gain (dB)	Measured Level (dBuV)	(V/H)	ACF (dB)	Field Strength (dBuV/m)	FCC Limit (dBuV/m)	Margin (dB)
925.942117	57.6	0.0	57.6	V	34.6	92.2	94.0	1.8
927.831322	58.0	0.0	58.0	V	34.6	92.6	94.0	1.4

b) Handset: Spurious Emissions

Transmitting Frequency: 927.135299MHz								
Emission (MHz)	FSM Reading (dBuV)	Amplifier Gain (dB)	Measured Level (dBuV)	(V/H)	ACF (dB)	Field Strength (dBuV/m)	FCC Limit (dBuV/m)	Margin (dB)
817.4289	46.3	29.1	17.2	V	25.5	42.7	46.0	3.3
1634.8577	38.7	29.0	9.7	V	33.8	43.5	54.0	10.5
1853.6740	41.3	28.9	12.4	V	37.5	49.9	54.0	4.1
2452.2866	35.0	28.6	6.4	H	40.0	46.4	54.0	7.6

c) Base unit: Fundamental Emissions

Emission (MHz)	FSM Reading (dBuV)	Amplifier Gain (dB)	Measured Level (dBuV)	(V/H)	ACF (dB)	Field Strength (dBuV/m)	FCC Limit (dBuV/m)	Margin (dB)
2428.522419	52.0	0.0	52.0	V	40.0	92.0	94.0	2.0
2434.190032	51.8	0.0	51.8	V	40.0	91.8	94.0	2.2

d) Base unit: Spurious Emissions

Transmitting Frequency: 2431.207078MHz								
Emission (MHz)	FSM Reading (dBuV)	Amplifier Gain (dB)	Measured Level (dBuV)	(V/H)	ACF (dB)	Field Strength (dBuV/m)	FCC Limit (dBuV/m)	Margin (dB)
810.4024	46.5	29.1	17.4	H	25.5	42.9	46.0	3.1
937.3768	47.9	29.0	18.9	H	25.8	44.7	54.0	9.3
1620.8047	45.7	29.0	16.7	V	33.8	50.5	54.0	3.5
2812.1303	28.0	28.7	-0.7	V	43.2	42.5	54.0	11.5
4862.4142	25.2	27.0	-1.8	V	52.5	50.7	54.0	3.3
7293.6212	12.9	26.0	-13.1	V	63.8	50.7	54.0	3.3

NOTE: All emissions not reported were more than 20 dB below the FCC limit.

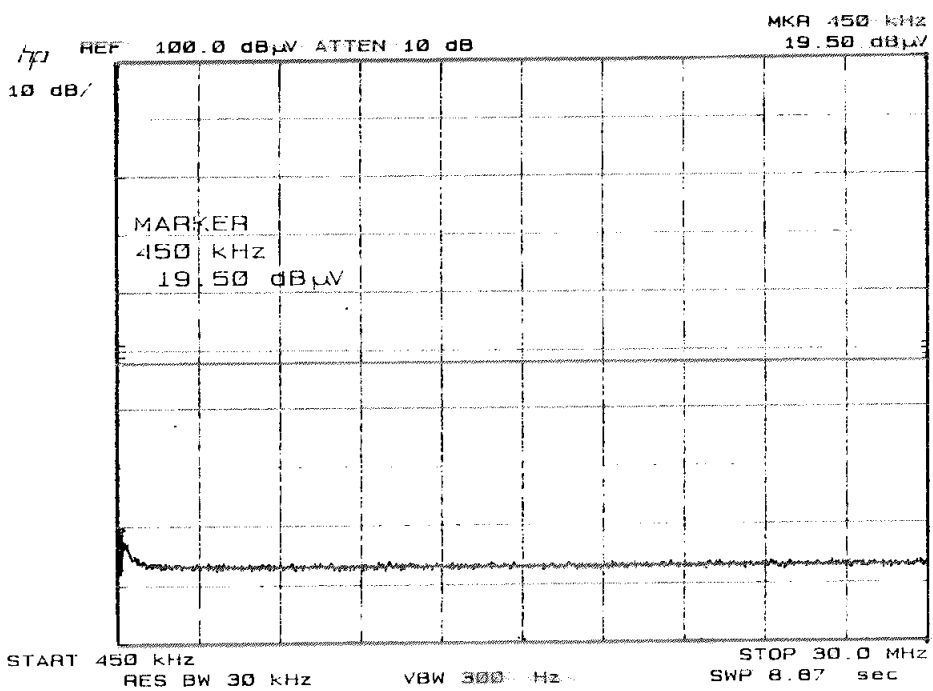
5-2 Power Line Conducted Emissions 15.207

Test Result

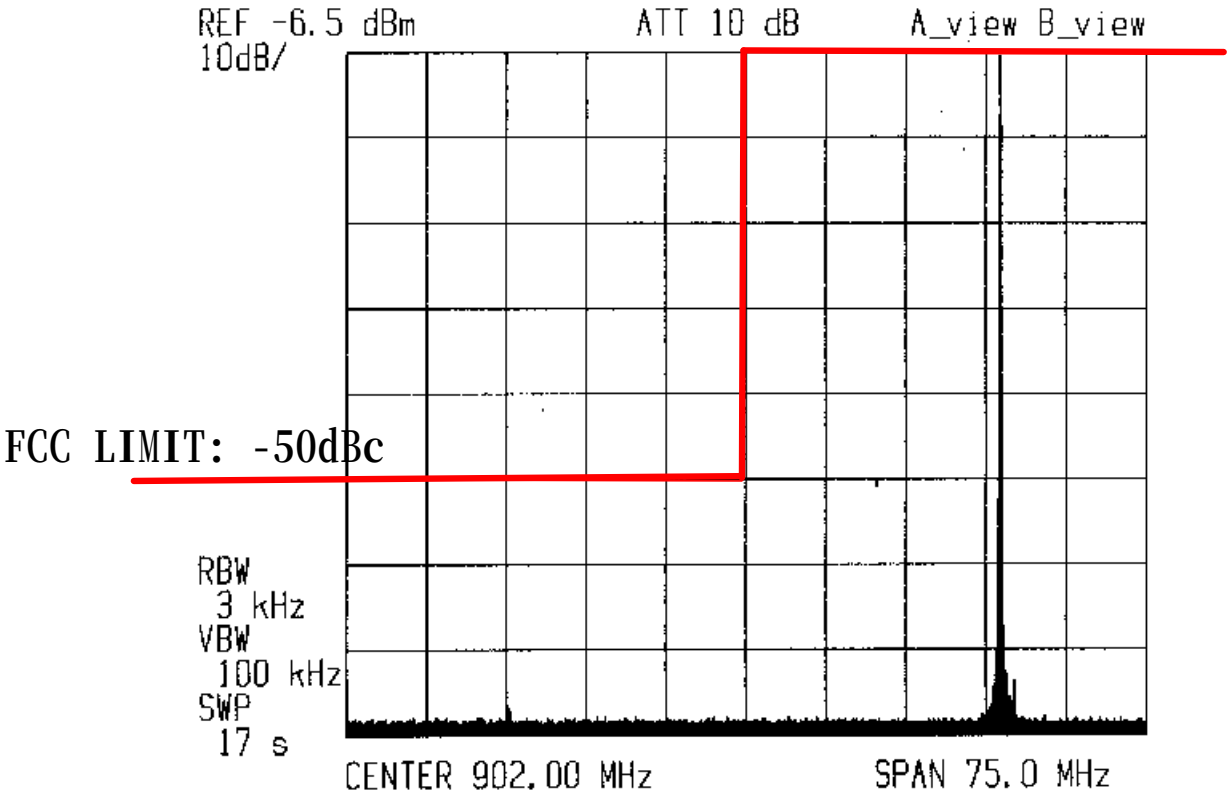
Transmitting frequency	Emissions Frequency	Measured Level
2431.207078MHz	NO EMISSIONS EXCEEDS 20dB BELOW THE FCC LIMIT.	

All emissions not reported were more than 20 dB below the FCC limit.
(See attached graphs as an example.)

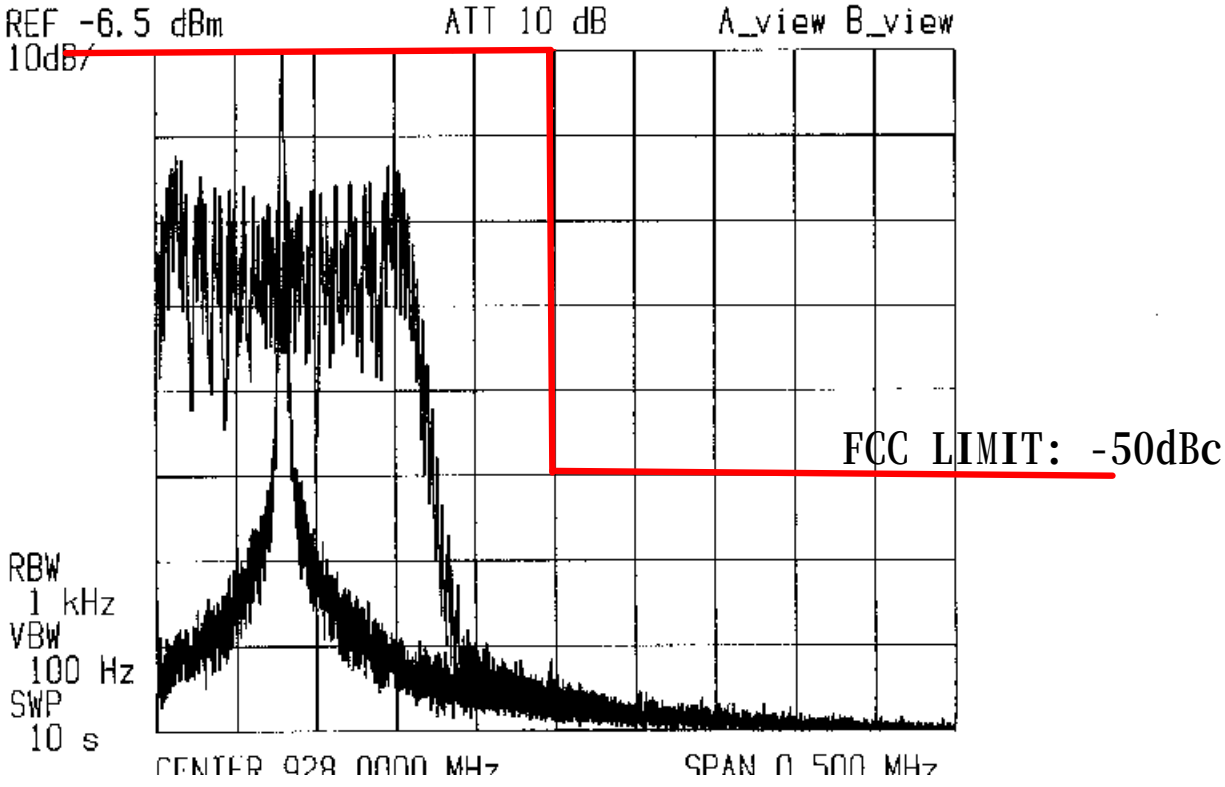
Handset:
The FCC requirement do not apply to the handset
since the handset is designed to operate with internal battery only.



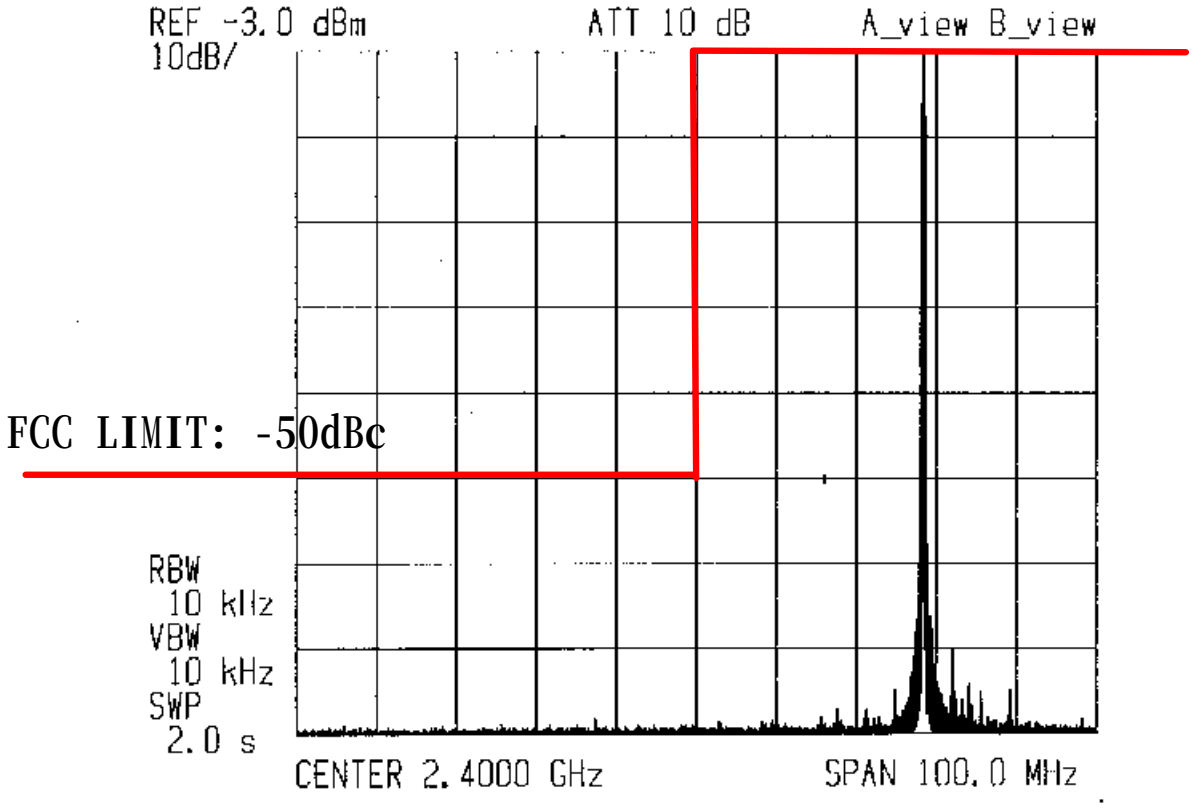
Band edge emissions:
Handset CH-1



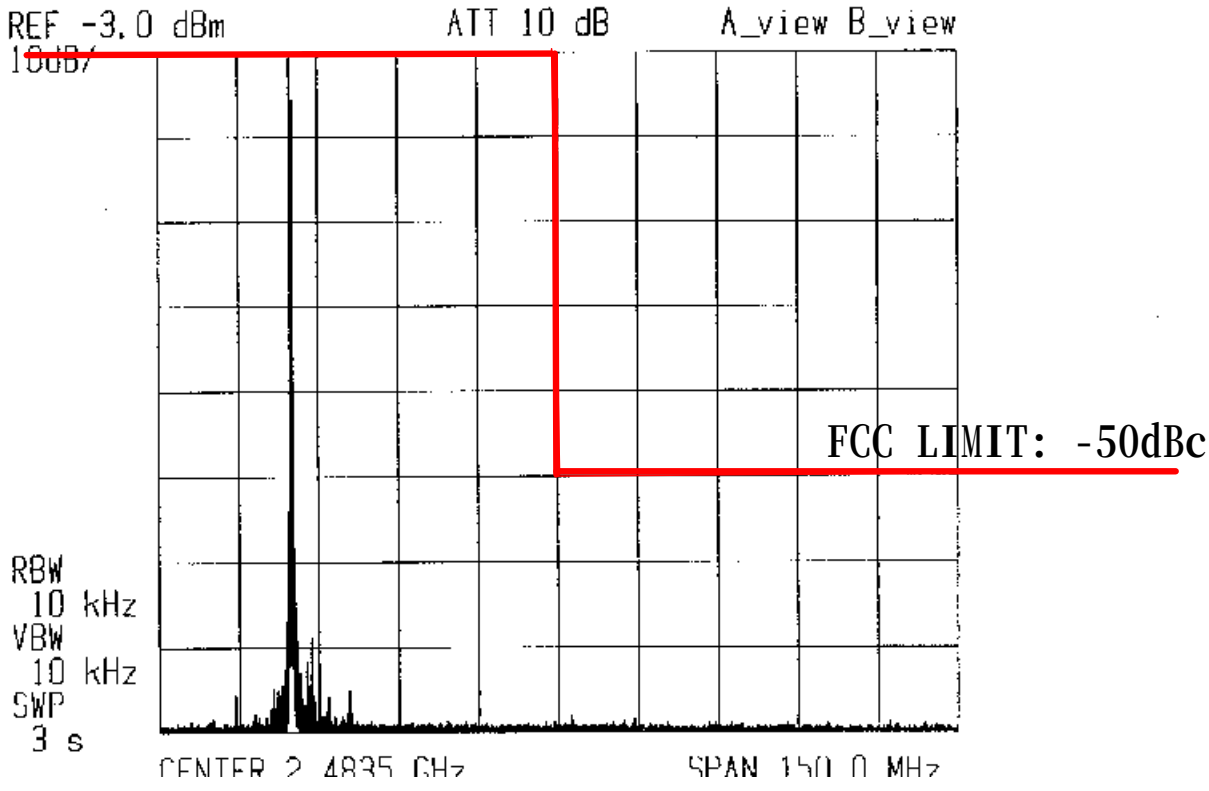
Band edge emissions:
Base unit CH-20



Band edge emissions:
Base unit CH-1



Band edge emissions:
Handset CH-20



LIST OF MEASUREMENT EQUIPMENTS

ENG-NO	TEST EQUIPMENT	TYPE	MFR	SERIAL NO.	Last Calibrtation
1287	AMPLIFIER	AFS30010040020	MITEQ	138315	N/A
1294	ANTENNA(BILOG)	CBL6112A	CHASE	2350	N/A
1602	ANTENNA(DIPOLE)	3120-B1	EMCO	0075	16-Jul-00
1603	ANTENNA(DIPOLE)	3120-B2	EMCO	0076	16-Jul-00
1604	ANTENNA(DIPOLE)	3120-B3	EMCO	0076	16-Jul-00
1560	ANTENNA(HORN)	3115	EMCO	2167	N/A
1388	LISN	KNW407	KYOURITSU	8-833-21	N/A
0682	POWER SUPPLY	AA300	TAKASAGO	31783013	N/A
0857	SPECTRUM ANALYZER	E7400A	HP	US40240145	23-Apr-01
0205	SPECTRUM ANALYZER	R3265	ADVANTEST	25060158	N/A