8.0 **Field Strength of Spurious Radiation**, FCC § 2.993, § 22.917(e)

8.1 Test Procedure

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT.

The frequency range up to tenth harmonic of each of the three fundamental frequency (low, middle, and high channels) was investigated.

The spurious emissions attenuation was calculated as the difference between EIRP in dB(pW) at the fundamental frequency (See Section 3) and at the spurious emissions frequency.

8.2 Test Equipment

EMCO 3115 Horn Antenna
HP 8566B Spectrum Analyzer
Tektronix 2782 Spectrum Analyzer
Low Pass Filter
Preamplifier

8.3 Test Results

Test Result:	Passed, refer to the attached

ITS Intertek Testing Services

Company: Mitsui Comtek Corp.
Project #: J99013163
Model: DMC201(AMPS mode Low Ch.)
Engineer: Xi-Ming Yang
Date of test: May 27, 1999

FCC Part 22 Radiated Emissions

Frequency	Antenna Polarity	Spec.	Reading	Antenna Factor	Cable Loss	Pre-amp	Field Strength	Spurious Attenuation	Margin
MHz	H/V	Detector	dB(uV)	dB/m	dB	dB	dB(uV/m)	dB	dB
1648.1	H	Peak	44.7	26.7	2.3	29.6	44.1	80.1	-40.3
2472.1	H	Peak	67.4	32.7	3.1	29.6	73.6	50.6	-10.8
3296.2	H	Peak	43.0	32.2	4.1	28.0	51.3	72.9	-33.1
4120.2	H	Peak	52.4	34.0	4.5	27.6	63.3	60.9	-21.1
4944.2	H	Peak	51.5	35.1	4.7	27.8	63.5	60.7	-20.9
5768.3	H	Peak	48.0	36.1	5.1	28.0	61.2	63.0	-23.2
6572.5	H	Peak	51.5	37.2	5.7	28.5	65.9	58.3	-18.5
7416.8	V	Peak	45.3	37.8	6.1	29.0	60.2	64.0	-24.2
8240.5	H	Peak	44.0	38.8	6.3	29.6	59.5	64.7	-24.9

Note: 1. All measurement were made at 3 meters.
2. Field strength at the fundamental frequency equals 124.2 dBuV/m
3. Spurious emissions attenuation limit equals 43+10log P = 39.5 dB

ITS Intertek Testing Services

Company: Mitsui Comtek Corp.
Project #: J99013163
Model: DMC201(AMPS mode Mid Ch.)
Engineer: Xi-Ming Yang
Date of test: May 27, 1999

FCC Part 22 Radiated Emissions

Frequency	Antenna Polarity	Spec.	Reading	Antenna Factor	Cable Loss	Pre-amp	Field Strength	Spurious Attenuation	Margin
MHz	H/V	Detector	dB(uV)	dB/m	dB	dB	dB(uV/m)	dB	dB
1673.0	H	Peak	47.2	26.7	2.3	29.6	46.6	77.3	-37.8
2509.6	H	Peak	71.8	32.7	3.1	29.6	78.0	45.9	-6.4
3346.1	H	Peak	48.7	32.2	4.1	28.0	57.0	66.9	-27.4
4182.6	H	Peak	47.6	34.0	4.5	27.6	58.5	65.4	-25.9
5019.1	H	Peak	52.0	35.1	4.7	27.8	64.0	59.9	-20.4
5855.6	H	Peak	49.8	36.1	5.1	28.0	63.0	60.9	-21.4
6692.2	H	Peak	55.2	37.2	5.7	28.5	69.6	54.3	-14.8
7528.7	V	Peak	42.3	37.8	6.1	29.0	57.2	66.7	-27.2
8365.2	H	Peak	48.6	38.8	6.3	29.6	64.1	59.8	-20.3

Note: 1. All measurement were made at 3 meters.
4. Field strength at the fundamental frequency equals 123.9 dBuV/m
5. Spurious emissions attenuation limit equals 43+10log P = 39.5 dB

ITS Intertek Testing Services

Company: Mitsui Comtek Corp.
Project #: J99013163
Model: DMC201(AMPS mode High Ch.)
Engineer: Xi-Ming Yang
Date of test: May 27, 1999

FCC Part 22 Radiated Emissions

Frequency	Antenna Polarity	Spec.	Reading	Antenna Factor	Cable Loss	Pre-amp	Field Strength	Spurious Attenuation	Margin
MHz	H/V	Detector	dB(uV)	dB/m	dB	dB	dB(uV/m)	dB	dB
1697.9	H	Peak	49.1	26.7	2.3	29.6	48.5	75.3	-35.9
2546.9	H	Peak	72.7	32.7	3.1	29.6	78.9	44.9	-5.5
3395.9	H	Peak	55.9	32.2	4.1	28.0	64.2	59.6	-20.2
4244.9	H	Peak	51.1	34.0	4.5	27.6	62.0	61.8	-22.4
5093.8	H	Peak	50.6	35.1	4.7	27.8	62.6	61.2	-21.8
5942.8	H	Peak	53.4	36.1	5.1	28.0	66.6	57.2	-17.8
6791.8	H	Peak	55.3	37.2	5.7	28.5	69.7	54.1	-14.7
7640.8	V	Peak	42.5	37.8	6.1	29.0	57.4	66.4	-27.0
8489.8	H	Peak	47.2	38.8	6.3	29.6	62.7	61.1	-21.7

Note: 1. All measurement were made at 3 meters.
6. Field strength at the fundamental frequency equals 123.8 dBuV/m
7. Spurious emissions attenuation limit equals 43+10log P = 39.4 dB

ITS Intertek Testing Services

Company: Mitsui Comtek Corp.
Project #: J99013163
Model: DMC201(AMPS mode)
Engineer: Xi-Ming Yang
Date of test: May 27, 1999

FCC Part 22 Radiated Emissions

AMPS Frequency	Receiving Antenna Polarity	Low Ch Reading	Antenna Factor	Cable Loss	Pre-amp	Distance Factor	Corrected Reading	Limit	Margin
MHz	H/V	dB(uV)	dB/m	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB
954.4	H	33.1	24.5	2.0	23.6	0.0	36.0	46.0	-10.0
1908.9	H	29.0	27.8	2.3	29.6	0.0	29.5	54.0	-24.5
2863.3	H	45.5	29.7	3.2	29.6	0.0	48.8	54.0	-5.2
3817.8	H	29.8	32.2	4.3	28.0	0.0	38.3	54.0	-15.7
AMPS	Receiving	Mid Ch							
966.9	H	33.1	24.5	2.0	23.6	0.0	36.0	54.0	-18.0
1933.8	H	31.0	27.8	2.3	29.6	0.0	31.5	54.0	-22.5
2900.7	H	45.3	29.7	3.2	29.6	0.0	48.6	54.0	-5.4
3867.6	H	30.0	32.2	4.3	28.0	0.0	38.5	54.0	-15.5
AMPS	Receiving	High Ch							
979.3	H	34.9	24.5	2.0	23.6	0.0	37.8	54.0	-16.2
1958.7	H	30.0	27.8	2.3	29.6	0.0	30.5	54.0	-23.5
2938.1	H	44.3	29.7	3.2	29.6	0.0	47.6	54.0	-6.4
3917.4	H	26.0	32.2	4.3	28.0	0.0	34.5	54.0	-19.5

Note: 1. All measurement were made at 3 meters.
2. Negative signs (-) in the margin column signify levels below the limit.

ITS Intertek Testing Services

Company: Mitsui Comtek Corp.
Project #: J99013163
Model: DMC201(CDMA mode)
Engineer: Xi-Ming Yang
Date of test: May 27, 1999

FCC Part 22 Radiated Emissions

CDMA Frequency	High Antenna Polarity	Ch Spec.	Reading	Antenna Factor	Cable Loss	Pre-amp	Field Strength	Spurious Attenuation	Margin
MHz	H/V	Detector	dB(uV)	dB/m	dB	dB	dB(uV/m)	dB	dB
1696.7	H	Average	42.5	26.7	2.3	29.6	41.9	73.5	-42.5
2544.0	H	Average	67.1	32.7	3.1	29.6	73.3	42.1	-11.1
3393.3	H	Average	46.9	32.2	4.1	28.0	55.2	60.2	-29.2
4240.2	H	Average	46.0	34.0	4.5	27.6	56.9	58.5	-27.5
5090.3	H	Average	44.0	35.1	4.7	27.8	56.0	59.4	-28.4
5938.4	H	Average	44.1	36.1	5.1	28.0	57.3	58.1	-27.1
6786.5	H	Average	44.0	37.2	5.7	28.5	58.4	57.0	-26.0
7634.9	V	Average	40.5	37.8	6.1	29.0	55.4	60.0	-29.0
8482.6	V	Average	36.0	38.8	6.3	29.6	51.5	63.9	-32.9

Note:
1. All measurement were made at 3 meters.
2. Field strength at the fundamental frequency equals 115.4 dBuV/m
5. Spurious emissions attenuation limit equals 43+10log P = 31.0 dB

ITS Intertek Testing Services

Company: Mitsui Comtek Corp.
Project #: J99013163
Model: DMC201(CDMA mode)
Engineer: Xi-Ming Yang
Date of test: May 27, 1999

FCC Part 22 Radiated Emissions

CDMA Frequency	High Antenna Polarity	Ch Spec.	Reading	Antenna Factor	Cable Loss	Pre-amp	Field Strength	Spurious Attenuation	Margin
MHz	H/V	Detector	dB(uV)	dB/m	dB	dB	dB(uV/m)	dB	dB
1696.7	H	Peak	48.6	26.7	2.3	29.6	48.0	70.4	-36.4
2544.0	H	Peak	74.0	32.7	3.1	29.6	80.2	38.2	-4.2
3393.3	H	Peak	52.2	32.2	4.1	28.0	60.5	57.9	-23.9
4240.2	H	Peak	57.5	34.0	4.5	27.6	68.4	50.0	-16.0
5090.3	H	Peak	51.0	35.1	4.7	27.8	63.0	55.4	-21.4
5938.4	H	Peak	55.0	36.1	5.1	28.0	68.2	50.2	-16.2
6786.5	H	Peak	55.0	37.2	5.7	28.5	69.4	49.0	-15.0
7634.9	V	Peak	53.0	37.8	6.1	29.0	67.9	50.5	-16.5
8482.6	V	Peak	46.0	38.8	6.3	29.6	61.5	56.9	-22.9

Note:
1. All measurement were made at 3 meters.
2. Field strength at the fundamental frequency equals 118.4 dBuV/m
4. Spurious emissions attenuation limit equals 43+10log P = 34.0 dB

ITS Intertek Testing Services

Company: Mitsui Comtek Corp.
Project #: J99013163
Model: DMC201(CDMA mode)
Engineer: Xi-Ming Yang
Date of test: May 27, 1999

FCC Part 22 Radiated Emissions

CDMA Frequency	Mid Antenna Polarity	Ch Spec.	Reading	Antenna Factor	Cable Loss	Pre-amp	Field Strength	Spurious Attenuation	Margin
MHz	H/V	Detector	dB(uV)	dB/m	dB	dB	dB(uV/m)	dB	dB
1673.0	H	Average	44.5	26.7	2.3	29.6	43.9	74.2	-40.5
2509.6	H	Average	65.9	32.7	3.1	29.6	72.1	46.0	-12.3
3346.1	H	Average	45.4	32.2	4.1	28.0	53.7	64.4	-30.7
4182.6	H	Average	48.4	34.0	4.5	27.6	59.3	58.8	-25.1
5019.1	H	Average	47.0	35.1	4.7	27.8	59.0	59.1	-25.4
5855.6	H	Average	43.2	36.1	5.1	28.0	56.4	61.7	-28.0
6694.4	H	Average	42.4	37.2	5.7	28.5	56.8	61.3	-27.6
7528.7	V	Average	42.0	37.8	6.1	29.0	56.9	61.2	-27.5
8365.3	V	Average	38.0	38.8	6.3	29.6	53.5	64.6	-30.9

Note:
1. All measurement were made at 3 meters.
2. Field strength at the fundamental frequency equals 118.1 dBuV/m
3. Spurious emissions attenuation limit equals 43+10log P = 33.7 dB

ITS Intertek Testing Services

Company: Mitsui Comtek Corp.
Project #: J99013163
Model: DMC201(CDMA mode)
Engineer: Xi-Ming Yang
Date of test: May 27, 1999

FCC Part 22 Radiated Emissions

CDMA Frequency	Mid Antenna Polarity	Ch Spec.	Reading	Antenna Factor	Cable Loss	Pre-amp	Field Strength	Spurious Attenuation	Margin
MHz	H/V	Detector	dB(uV)	dB/m	dB	dB	dB(uV/m)	dB	dB
1673.0	H	Peak	49.3	26.7	2.3	29.6	48.7	72.5	-35.7
2509.6	H	Peak	71.0	32.7	3.1	29.6	77.2	44.0	-7.2
3346.1	H	Peak	53.2	32.2	4.1	28.0	61.5	59.7	-22.9
4182.6	H	Peak	56.8	34.0	4.5	27.6	67.7	53.5	-16.7
5019.1	H	Peak	56.0	35.1	4.7	27.8	68.0	53.2	-16.4
5855.6	H	Peak	52.2	36.1	5.1	28.0	65.4	55.8	-19.0
6694.4	H	Peak	56.5	37.2	5.7	28.5	70.9	50.3	-13.5
7528.7	V	Peak	53.6	37.8	6.1	29.0	68.5	52.7	-15.9
8365.3	V	Peak	49.0	38.8	6.3	29.6	64.5	56.7	-19.9

Note:
1. All measurement were made at 3 meters.
2. Field strength at the fundamental frequency equals 121.2 dBuV/m
3. Spurious emissions attenuation limit equals 43+10log P = 36.8 dB

ITS Intertek Testing Services

Company: Mitsui Comtek Corp.
Project #: J99013163
Model: DMC201(CDMA mode)
Engineer: Xi-Ming Yang
Date of test: May 27, 1999

FCC Part 22 Radiated Emissions

CDMA Frequency	Low Antenna Polarity	Ch Spec.	Reading	Antenna Factor	Cable Loss	Pre-amp	Field Strength	Spurious Attenuation	Margin
MHz	H/V	Detector	dB(uV)	dB/m	dB	dB	dB(uV/m)	dB	dB
1649.4	H	Average	45.4	26.7	2.3	29.6	44.8	73.6	-39.6
2474.1	H	Average	64.1	32.7	3.1	29.6	70.3	48.1	-14.1
3298.8	H	Average	39.1	32.2	4.1	28.0	47.4	71.0	-37.0
4123.4	H	Average	39.8	34.0	4.5	27.6	50.7	67.7	-33.7
4948.2	H	Average	42.5	35.1	4.7	27.8	54.5	63.9	-29.9
5772.9	H	Average	42.0	36.1	5.1	28.0	55.2	63.2	-29.2
6597.5	H	Average	47.0	37.2	5.7	28.5	61.4	57.0	-23.0
7422.3	V	Average	37.0	37.8	6.1	29.0	51.9	66.5	-32.5
8246.9	V	Average	36.0	38.8	6.3	29.6	51.5	66.9	-32.9

Note:
1. All measurement were made at 3 meters.
2. Field strength at the fundamental frequency equals 118.4 dBuV/m
3. Spurious emissions attenuation limit equals 43+10log P = 34.0 dB

ITS Intertek Testing Services

Company: Mitsui Comtek Corp.
Project #: J99013163
Model: DMC201(CDMA mode)
Engineer: Xi-Ming Yang
Date of test: May 27, 1999

FCC Part 22 Radiated Emissions

CDMA Frequency	Low Antenna Polarity	Ch Spec.	Reading	Antenna Factor	Cable Loss	Pre-amp	Field Strength	Spurious Attenuation	Margin
MHz	H/V	Detector	dB(uV)	dB/m	dB	dB	dB(uV/m)	dB	dB
1649.4	H	Peak	50.0	26.7	2.3	29.6	49.4	72.0	-35.0
2474.1	H	Peak	68.8	32.7	3.1	29.6	75.0	46.4	-9.4
3298.8	H	Peak	47.7	32.2	4.1	28.0	56.0	65.4	-28.4
4123.4	H	Peak	47.0	34.0	4.5	27.6	57.9	63.5	-26.5
4948.2	H	Peak	50.0	35.1	4.7	27.8	62.0	59.4	-22.4
5772.9	H	Peak	51.0	36.1	5.1	28.0	64.2	57.2	-20.2
6597.5	H	Peak	57.0	37.2	5.7	28.5	71.4	50.0	-13.0
7422.3	V	Peak	46.0	37.8	6.1	29.0	60.9	60.5	-23.5
8246.9	V	Peak	48.0	38.8	6.3	29.6	63.5	57.9	-20.9

Note:
1. All measurement were made at 3 meters.
2. Field strength at the fundamental frequency equals 121.4 dBuV/m
3. Spurious emissions attenuation limit equals 43+10log P = 37.0 dB

ITS Intertek Testing Services

Company: Mitsui Comtek Corp.
Project #: J99013163
Model: DMC201(CDMA mode)
Engineer: Xi-Ming Yang
Date of test: May 27, 1999

FCC Part 22 Radiated Emissions

CDMA Frequency	Receiving Antenna Polarity	Low Ch Reading	Antenna Factor	Cable Loss	Pre-amp	Distance Factor	Corrected Reading	Limit	Margin
MHz	H/V	dB(uV)	dB/m	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB
955.1	H	33.5	24.5	2.0	23.6	0.0	36.4	46.0	-9.6
1910.2	H	29.0	27.8	2.3	29.6	0.0	29.5	54.0	-24.5
2865.2	H	44.5	29.7	3.2	29.6	0.0	47.8	54.0	-6.2
3820.3	H	30.0	32.2	4.3	28.0	0.0	38.5	54.0	-15.5
CDMA	Receiving	Mid Ch							
966.9	H	34.7	24.5	2.0	23.6	0.0	37.6	54.0	-16.4
1933.8	H	31.0	27.8	2.3	29.6	0.0	31.5	54.0	-22.5
2900.7	H	43.4	29.7	3.2	29.6	0.0	46.7	54.0	-7.3
3867.6	H	30.0	32.2	4.3	28.0	0.0	38.5	54.0	-15.5
CDMA	Receiving	High Ch							
978.7	H	35.0	24.5	2.0	23.6	0.0	37.9	54.0	-16.1
1957.4	H	30.0	27.8	2.3	29.6	0.0	30.5	54.0	-23.5
2936.0	H	44.5	29.7	3.2	29.6	0.0	47.8	54.0	-6.2
3914.7	H	30.0	32.2	4.3	28.0	0.0	38.5	54.0	-15.5

Note: 1. All measurement were made at 3 meters.
2. Negative signs (-) in the margin column signify levels below the limit.

ITS Intertek Testing Services

Company: Mitsui Comtek Corp.
Project #: J99013163
Model: DMC201(AMPS mode)
Engineer: Xi-Ming Yang
Date of test: May 27, 1999

FCC Part 15.209 Radiated Emissions

Frequency	Antenna Polarity	Reading	Antenna Factor	Cable Loss	Pre-amp	Distance Factor	Corrected Reading	Limit	Margin
MHz	H/V	dB(uV)	dB/m	dB	dB	dB	dB(uV/m)	dB(uV/m)	dB
39.4	V	15.0	6.9	0.0	0.0	0.0	21.9	40.0	-18.1
65.7	V	17.0	5.4	0.0	0.0	0.0	22.4	40.0	-17.6
78.9	V	16.7	5.7	0.0	0.0	0.0	22.4	40.0	-17.6
200.0	H	18.0	10.2	0.0	0.0	0.0	28.2	43.5	-15.3
300.0	H	10.0	13.1	0.0	0.0	0.0	23.1	46.0	-22.9
500.0	H	10.0	17.4	0.0	0.0	0.0	27.4	46.0	-18.6

Note: 1. All measurement were made at 3 meters.
2. Negative signs (-) in the margin column signify levels below the limit.

9.0 **Line Conducted Emissions**, FCC § 15.107

9.1 Test Procedure

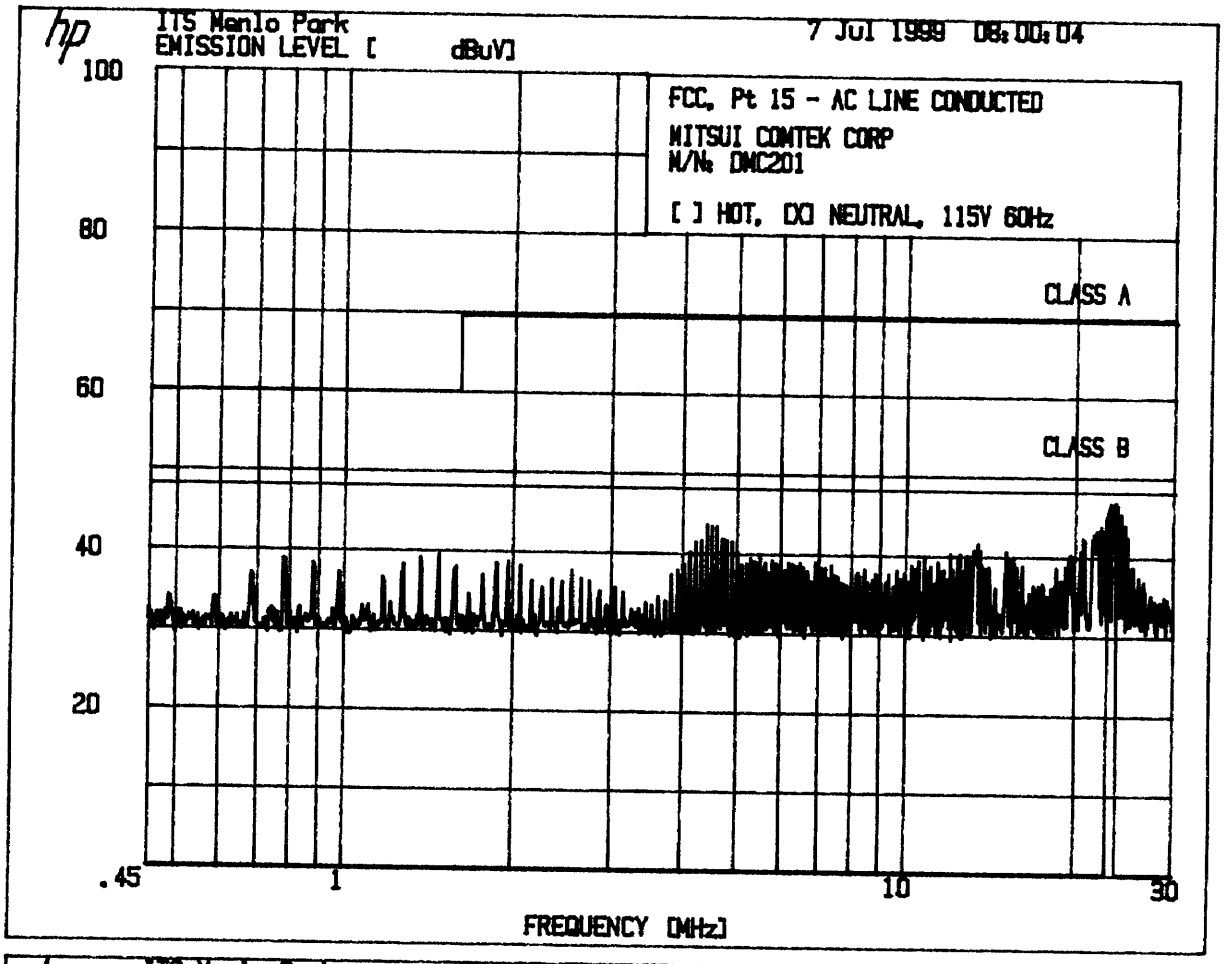
Test procedure described in the ANSI C63.4 Standard was employed.

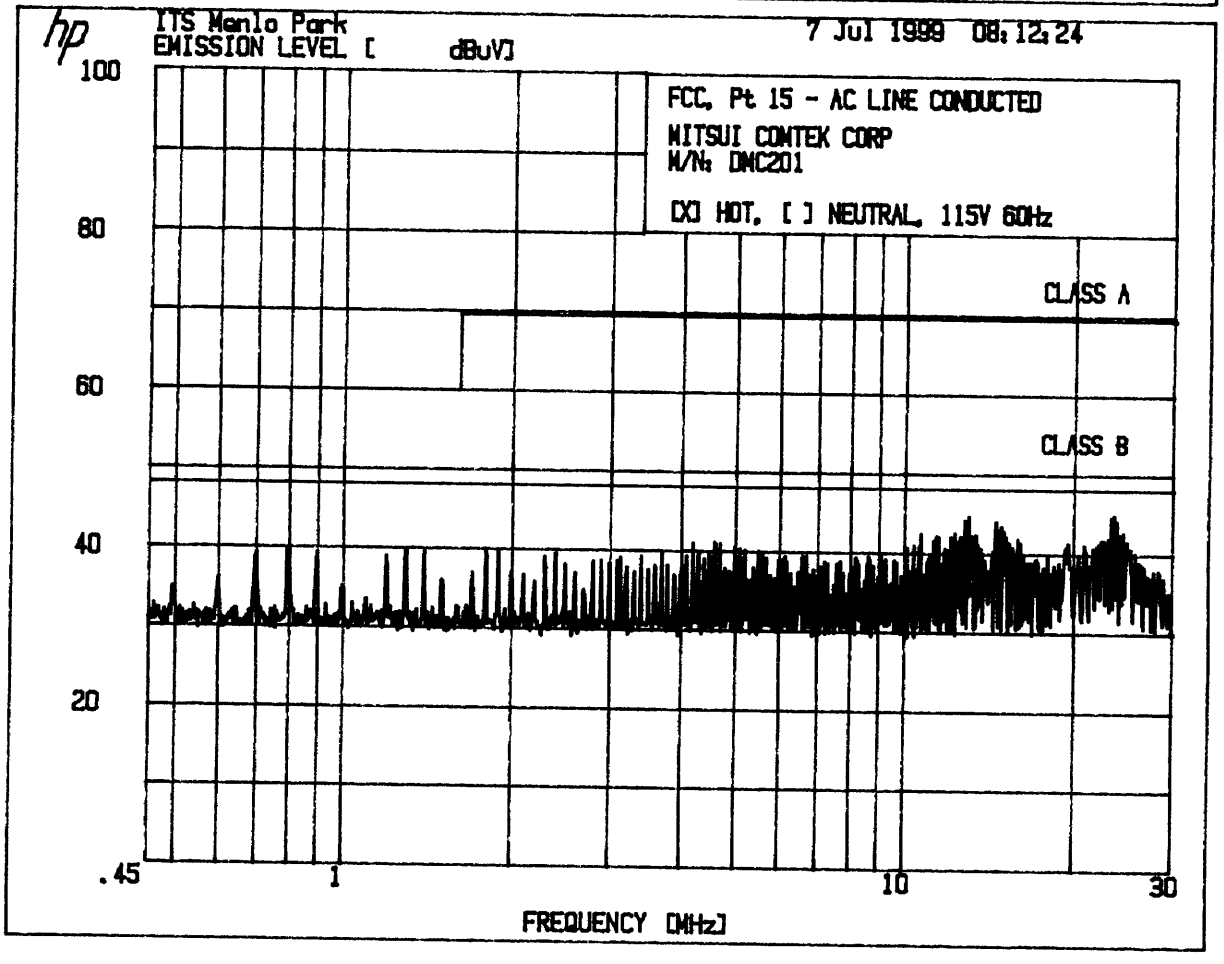
The EUT was connected to the DC power supply (Topward Electric Instrument, Model No.: TPS 4000), that was connected to the AC line through the LISNs.

Both HOT and NEUTRAL leads were tested.

9.2 Test Results - Line Conducted Emissions

Refer to the attached test data.


ITS Menlo Park
EMISSION LEVEL [dBuV]
7 Jul 1999 08:00:04
FCC, Pt 15 - AC LINE CONDUCTED
MITSUI COMTEK CORP
M/N: DMC201
[ ] HOT, [X] NEUTRAL, 115V 60Hz
CLASS A
CLASS B
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]


ITS Menlo Park
EMISSION LEVEL [dBuV]
7 Jul 1999 08:12:24
FCC, Pt 15 - AC LINE CONDUCTED
MITSUI COMTEK CORP
M/N: DMC201
[X] HOT, [ ] NEUTRAL, 115V 60Hz
CLASS A
CLASS B
100
80
60
40
20
.45
1
10
30
FREQUENCY [MHz]

ITS Menlo Park 7 Jul 1999 08:12:24

3. FCC CFR 47, Pt 15
   3.1 FCC, Pt 15 - AC LINE CONDUCTED

MITSUI COMTEK CORP
M/N: DMC201

[X] HOT, [ ] NEUTRAL, 115V 60Hz

PEAKS FOUND ABOVE 45 dBuV

PEAK#	FREQ (MHz)	AMPL(dBuV)
1	23.62	45.0

ITS Menlo Park 7 Jul 1999 08:00:04

3. FCC CFR 47, Pt 15
   3.1 FCC, Pt 15 - AC LINE CONDUCTED

MITSUI COMTEK CORP
M/N: DMC201

[ ] HOT, [X] NEUTRAL, 115V 60Hz

PEAKS FOUND ABOVE 45 dBuV

PEAK#	FREQ (MHz)	AMPL(dBuV)
1	22.84	45.0
2	23.03	45.6
3	23.42	46.4
4	23.62	45.6
5	24.22	45.4

Tottori Sanyo Electric Co., Ltd., Cellular Phone **Date of Test: May 27 & 28, 1999 & July 7, 1999**
FCC ID: NRNDMC200

10.0 **Frequency Stability vs Temperature**, FCC § 2.995(a), § 22.355
Frequency Tolerance: ±2.5 ppm

10.1 Test Procedure

The equipment under test was connected to an external DC power supply and the RF output was connected to a frequency counter via feedthrough attenuators. The EUT was placed inside the temperature chamber. The DC leads, RF output cable, and external PTT cable exited the chamber through an opening made for that purpose.

After the temperature stabilized for approximately 20 minutes, the external PTT switch was activated, and the frequency output was recorded from the counter.

10.2 Test Equipment

Temperature Chamber, -50C to +100C
Hewlett Packard 5383A Frequency Counter
Goldstar DC Power Supply, GR303
Rohde & Schwarz ESVP Test Receiver

10.3 Test Results

Test Result:	Passed

Frequency: 836.49 MHz		
Temperature, C	Frequency (MHz)	Difference (Hz)
60	836.488440	-1560
50	836.488290	-1710
40	836.488170	-1830
30	836.488350	-1650
20	836.488360	-1140
10	836.489530	-470
0	836.489580	-420
-10	836.489780	-220
-20	836.489770	-230
-30	836.478625	-275

11.0 **Frequency Stability vs Voltage**, FCC § 2.995(d)(2), § 22.355

Frequency Tolerance: ±2.5 ppm

11.1 Test Procedure

An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminates; i.e., the battery end point. The output frequency was recorded for each battery voltage.

11.2 Test Equipment

Hewlett Packard 5383A Frequency Counter
DC Power Supply
Rohde & Schwarz ESVP Test Receiver

11.3 Test Results.

Test Result:	Passed

Frequency; 836.49 MHz (Middle Channel)		
D.C. Volts	Frequency (MHz)	Difference (Hz)
4.14	836.48845	-1550
3.60	836.48840	-1660
3.06	836.48801	-1990

12.0 List of Exhibits:

1. Setup Photos
2. Photographs
3. Block Diagram
4. Schematics Diagram
5. Theory of Operation & Tune-Up Procedure
6. ESN Protection Guidelines (FCC Section 22.919)
7. SAR Data
8. Users Manual