

1.1. EFFECTIVE RADIATED POWER LIMITS @ FCC 2.985 & 22.913

1.1.1. Limits @ FCC 22.913

The effective radiated power (EIRP) of transmitters in the Cellular Radiotelephone Service must not exceed the limits in this section:

	Maximum ERP (Watts)
Base Transmitters (869-894 MHz)	500 Watts
Mobile Transmitters & Auxiliary Test Transmitters (824-849 MHz)	7 Watts

1.1.2. Method of Measurements

Please refer to Exhibit 8, Sec. 8.1 for test procedures and test setup.

1.1.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Hewlett Packard	HP 8593EM	3412A00103	9 kHz – 26.5 GHz
Attenuator(s)	Bird	..	...	DC – 22 GHz
Dipole Antenna	EMCO	3121C	8907-434	20-1000 MHz
Dipole Antenna	EMCO	3121C	8907-440	20-1000 MHz

1.1.4. Test Data

TRANSMITTER CHANNEL OUTPUT	FUNDAMENTAL FREQUENCY (MHz)	MEASURED FIELD STRENGTH (dBmV/m)		MEASURED EIRP (dBm)		Maximum Allowable EIRP (dBm)
		VERTICAL	HORIZONTAL	VERTICAL	HORIZONTAL	
Lowest	824.9750	109.8	109.8	14.6	14.6	38.5
Middle	836.4951	110.2	110.2	15.0	15.0	38.5
Highest	848.9440	110.2	110.2	15.0	15.0	38.5

TRANSMITTER CHANNEL OUTPUT	FUNDAMENTAL FREQUENCY (MHz)	MEASURED AVERAGE POWER (P) (dBm)	EIRP Power (dBm)	Antenna Gain (dBi)
Lowest	824.9750	27.0	14.6	-12.4
Middle	836.4951	26.6	15.0	-11.6
Highest	848.9440	24.8	15.0	-9.8

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4
Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: yhk.ultratech@sympatico.ca, Website: <http://www.ultratech-labs.com>

File #: MXA-002F22
July 21, 2000

- Assessed by ITI (UK) Competent Body, NVLAP (USA) Accreditation Body & ACA/AUSTEL (Australia)
- Recognized/Listed by FCC (USA), Industry Canada (Canada)
- All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

1.2. MODULATION REQUIREMENTS @ FCC 2.987(B) & 22.915(A),(B) & (C)

1.2.1. Limits @ FCC 22.915

- (a) **Non-voice modulating signals.** Modulating signals other than voice signals such as data signals, may be transmitted, provided the resulting modulated emission exhibits spectral characteristics not exceeding those resulting from voice modulation.
- (b) **Modulation Levels.** The level of the modulating signals must be set to the values specified in this paragraph and must be maintained within $\pm 10\%$ of those values:
 - (1) The instantaneous frequency deviation resulting from the main modulating signal must be ± 12 kHz.
 - (2) The instantaneous frequency deviation resulting from the supervisory audio tones must be ± 2 kHz.
 - (3) The instantaneous frequency deviation resulting from the signaling tone must be ± 8 kHz.
 - (4) The instantaneous frequency deviation resulting from the wideband data signals must be ± 8 kHz.
- (c) **Deviation Limitation Circuitry.** Cellular transmitters must be equipped with circuitry that automatically prevents modulation levels for voice transmission from exceeding the limits specified in this section.

1.2.2. Method of Measurements

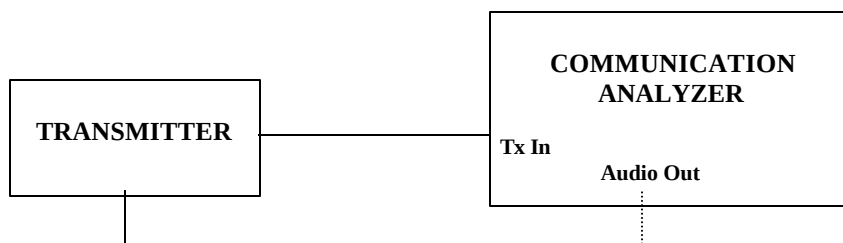
For Audio Transmitter:- The carrier frequency deviation was measured with the tone input signal level varied from 0 Vp to audio input rating level plus 16 dB at frequencies 0.1, 0.5, 1.0, 3.0 and 5.0 kHz. The maximum deviation was recorded at each test condition.

For Data Transmitter with Maximum Frequency Deviation set by Factory:- The EUT was set at maximum frequency deviation, and its peak frequency deviation was then measured using EUT's internal random data source.

1.2.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Communication Analyzer	Rohde & Schawrz	SMF02	879988/057	400 kHz - 1000 MHz including AF & RF Signal Generators, SINAD, DISTORTION, DEVIATION meters and etc

1.2.4. Test Arrangement



ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4
Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: yhk.ultratech@sympatico.ca, Website: <http://www.ultratech-labs.com>

File #: MXA-002F22
July 21, 2000

- Assessed by ITI (UK) Competent Body, NVLAP (USA) Accreditation Body & ACA/AUSTEL (Australia)
- Recognized/Listed by FCC (USA), Industry Canada (Canada)
- All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

1.2.5. Test Data

Main Modulating Signal: Modulation Limiting set at ± 12 kHz

1kHz MODULATING SIGNAL LEVEL (mV)	PEAK FREQUENCY DEVIATION (KHz)	MAXIMUM LIMIT (KHz)
250 (Min. audio input rating)	11.5	± 10.8 kHz to ± 13.2 kHz
260	12.2	± 10.8 kHz to ± 13.2 kHz
270	11.3	± 10.8 kHz to ± 13.2 kHz
280	11.3	± 10.8 kHz to ± 13.2 kHz
290	12.0	± 10.8 kHz to ± 13.2 kHz
300	12.4	± 10.8 kHz to ± 13.2 kHz
320	12.3	± 10.8 kHz to ± 13.2 kHz
340	12.4	± 10.8 kHz to ± 13.2 kHz
360	12.1	± 10.8 kHz to ± 13.2 kHz
380	12.3	± 10.8 kHz to ± 13.2 kHz
400	12.5	± 10.8 kHz to ± 13.2 kHz
600	12.3	± 10.8 kHz to ± 13.2 kHz
800	11.9	± 10.8 kHz to ± 13.2 kHz
1000	12.1	± 10.8 kHz to ± 13.2 kHz
1500	12.5	± 10.8 kHz to ± 13.2 kHz
2000	11.9	± 10.8 kHz to ± 13.2 kHz
3000	11.8	± 10.8 kHz to ± 13.2 kHz

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4
 Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: yhk.ultratech@sympatico.ca, Website: <http://www.ultratech-labs.com>

File #: MXA-002F22
 July 21, 2000

- Assessed by ITI (UK) Competent Body, NVLAP (USA) Accreditation Body & ACA/AUSTEL (Australia)
- Recognized/Listed by FCC (USA), Industry Canada (Canada)
- All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

Voice Signal Input Level = 300 mili-Volts

MODULATING FREQUENCY (KHz)	PEAK FREQUENCY DEVIATION (KHz)	MAXIMUM LIMIT (KHz)
0.3	5.1 (Note 1)	± 10.8 kHz to ± 13.2 kHz
0.4	7.5 (Note 1)	± 10.8 kHz to ± 13.2 kHz
0.6	9.6 (Note 1)	± 10.8 kHz to ± 13.2 kHz
0.8	11.5	± 10.8 kHz to ± 13.2 kHz
1.0	11.9	± 10.8 kHz to ± 13.2 kHz
1.2	11.0	± 10.8 kHz to ± 13.2 kHz
1.4	11.0	± 10.8 kHz to ± 13.2 kHz
1.6	10.9	± 10.8 kHz to ± 13.2 kHz
1.8	10.9	± 10.8 kHz to ± 13.2 kHz
2.0	10.9	± 10.8 kHz to ± 13.2 kHz
2.5	11.1	± 10.8 kHz to ± 13.2 kHz
3.0	8.7 (Note 1)	± 10.8 kHz to ± 13.2 kHz

Note (1): The frequency deviation outside the audio frequency band dropped below 10.8 kHz because of the audio bandpass filter.

ULTRATECH GROUP OF LABS

3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4
Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: yhk.ultratech@sympatico.ca, Website: <http://www.ultratech-labs.com>

File #: MXA-002F22
July 21, 2000

- Assessed by ITI (UK) Competent Body, NVLAP (USA) Accreditation Body & ACA/AUSTEL (Australia)
- Recognized/Listed by FCC (USA), Industry Canada (Canada)
- All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)