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SUPERSEDED

TIA/EIA INTERIM STANDARD

**Recommended Minimum Performance
Standards for Base Stations
Supporting Dual-Mode Wideband
Spread Spectrum Cellular Mobile
Stations**

TIA/EIA/IS-97

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TELECOMMUNICATIONS INDUSTRY ASSOCIATION



Representing the telecommunications industry
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CONTENTS

1	1 INTRODUCTION	1-1
2	1.1 Scope	1-1
3	1.2 General Description of Cellular Mobile Telephone System.....	1-1
4	1.3 Definition of Dual-Mode Base Station (Analog Mode Operation)	1-2
5	1.3.1 Channel Numbering and Frequencies	1-3
6	1.3.2 Reserved	1-4
7	1.3.3 Duty Cycles	1-4
8	1.3.4 Full Duplex Operation	1-4
9	1.3.5 Time Intervals	1-4
10	1.4 Definition of Dual-Mode Base Station (CDMA Mode Operation)	1-4
11	1.4.1 Channel Numbering and Frequencies	1-5
12	1.4.2 Reserved	1-5
13	1.4.3 Duty Cycles	1-5
14	1.4.4 Full Duplex Operation	1-5
15	1.4.5 Time Intervals	1-5
16	1.5 Supplementary Terms and Definitions	1-6
17	2 ANALOG RECEIVER MINIMUM STANDARDS	2-1
18	2.1 Frequency Requirements	2-1
19	2.2 Demodulation Requirements	2-1
20	2.2.1 Type of Demodulation	2-1
21	2.2.2 Demodulated Voice Signals	2-1
22	2.2.2.1 Voice Audio Frequency Response	2-1
23	2.2.2.1.1 Definition	2-1
24	2.2.2.1.2 Method of Measurement	2-1
25	2.2.2.1.3 Minimum Standard	2-2
26	2.2.2.2 Audio Muting	2-2
27	2.2.2.2.1 Definition	2-2
28	2.2.2.2.2 Method of Measurement	2-2
29	2.2.2.2.3 Minimum Standard	2-2
30	2.2.2.3 Expander	2-2
31	2.2.2.3.1 Definition	2-2

CONTENTS

1	2.2.2.3.2 Method of Measurement	2-2
2	2.2.2.3.3 Minimum Standard	2-3
3	2.2.2.4 Hum and Noise	2-3
4	2.2.2.4.1 Definition	2-3
5	2.2.2.4.2 Method of Measurement	2-3
6	2.2.2.4.3 Minimum Standard	2-4
7	2.2.2.5 Audio Harmonic Distortion.....	2-4
8	2.2.2.5.1 Definition	2-4
9	2.2.2.5.2 Method of Measurement	2-4
10	2.2.2.5.3 Minimum Standard	2-4
11	2.2.2.6 Receive-Audio Sensitivity.....	2-4
12	2.2.2.6.1 Definition	2-4
13	2.2.2.6.2 Method of Measurement	2-4
14	2.2.2.6.3 Minimum Standard	2-4
15	2.2.3 Demodulated Data and Control Signals.....	2-5
16	2.2.3.1 Manchester Decoding.....	2-5
17	2.2.3.2 Supervisory Audio Tone (SAT) Decoding	2-5
18	2.2.3.2.1 Definition	2-5
19	2.2.3.2.2 Method of Measurement	2-5
20	2.2.3.2.3 Minimum Standard	2-6
21	2.2.3.3 Signaling Tone (ST) Detection.....	2-6
22	2.2.3.3.1 Definition	2-6
23	2.2.3.3.2 Method of Measurement	2-6
24	2.2.3.3.3 Minimum Standard	2-6
25	2.3 Receiver Performance	2-6
26	2.3.1 RF Sensitivity	2-7
27	2.3.1.1 Definition	2-7
28	2.3.1.2 Method of Measurement.....	2-7
29	2.3.1.3 Minimum Standard	2-7
30	2.3.2 Adjacent and Alternate Channel Desensitization	2-8
31	2.3.2.1 Definition.....	2-8

CONTENTS

1	2.3.2.2 Method of Measurement	2-8
2	2.3.2.3 Minimum Standard	2-8
3	2.3.3 Intermodulation Spurious Response Attenuation	2-8
4	2.3.3.1 Definition	2-8
5	2.3.3.2 Method of Measurement	2-9
6	2.3.3.3 Minimum Standard	2-9
7	2.3.4 Protection Against Spurious-Response Interference	2-9
8	2.3.4.1 Definition	2-9
9	2.3.4.2 Method of Measurement	2-9
10	2.3.4.3 Minimum Standard	2-10
11	2.3.5 Bit-Error Rate	2-10
12	2.3.5.1 Definition	2-10
13	2.3.5.2 Method of Measurement	2-10
14	2.3.5.3 Minimum Standard	2-11
15	2.4 Conducted Spurious Emission	2-11
16	2.4.1 Definition	2-11
17	2.4.2 Method of Measurement	2-11
18	2.4.3 Minimum Standard	2-11
19	2.5 Radiated Spurious Emission	2-12
20	2.5.1 Definition	2-12
21	2.5.2 Method of Measurement	2-12
22	2.5.3 Minimum Standard	2-12
23	2.6 Received Signal Strength Indicator (RSSI)	2-12
24	2.7 Cross Talk from Transmitter	2-13
25	2.7.1 Definition	2-13
26	2.7.2 Method of Measurement	2-13
27	2.7.3 Minimum Standard	2-13
28	3 ANALOG TRANSMITTER MINIMUM STANDARDS	3-1
29	3.1 Frequency Requirements	3-1
30	3.1.1 Reserved	3-1
31	3.1.2 Frequency Stability	3-1

CONTENTS

1	3.1.2.1 Definition	3-1
2	3.1.2.2 Method of Measurement.....	3-1
3	3.1.2.3 Minimum Standard	3-1
4	3.1.3 Carrier Switching Time	3-1
5	3.1.3.1 Definition	3-1
6	3.1.3.2 Method of Measurement.....	3-2
7	3.1.3.3 Minimum Standard	3-2
8	3.2 RF Power Output Requirements.....	3-2
9	3.2.1 RF Power Output	3-2
10	3.2.1.1 Definition	3-2
11	3.2.1.2 Method of Measurement.....	3-2
12	3.2.1.3 Minimum Standard	3-2
13	3.3 Modulation Requirements	3-3
14	3.3.1 Modulation Type and Modulation Stability	3-3
15	3.3.1.1 Definition	3-3
16	3.3.1.2 Method of Measurement.....	3-3
17	3.3.1.3 Minimum Standard	3-3
18	3.3.2 Voice Modulation	3-3
19	3.3.2.1 Compressor.....	3-4
20	3.3.2.1.1 Definition	3-4
21	3.3.2.1.2 Method of Measurement	3-4
22	3.3.2.1.3 Minimum Standard	3-4
23	3.3.2.2 Transmit-Audio Response	3-4
24	3.3.2.2.1 Definition	3-4
25	3.3.2.2.2 Method of Measurement	3-5
26	3.3.2.2.3 Minimum Standard	3-5
27	3.3.2.3 Modulation Deviation Limiting	3-5
28	3.3.2.3.1 Definition	3-5
29	3.3.2.3.2 Method of Measurement	3-5
30	3.3.2.3.3 Minimum Standard	3-6
31	3.3.2.4 Reserved	3-6

CONTENTS

1	3.3.2.5 Transmit-Audio Sensitivity	3-6
2	3.3.2.5.1 Definition	3-6
3	3.3.2.5.2 Method of Measurement	3-6
4	3.3.2.5.3 Minimum Standard	3-6
5	3.3.3 Wideband Data	3-6
6	3.3.3.1 Definition	3-6
7	3.3.3.2 Method of Measurement	3-7
8	3.3.3.3 Minimum Standard	3-7
9	3.3.4 Supervisory Audio Tone (SAT).....	3-7
10	3.3.4.1 Definition	3-7
11	3.3.4.2 Method of Measurement	3-7
12	3.3.4.3 Minimum Standard	3-7
13	3.3.5 Reserved	3-7
14	3.3.6 FM Hum and Noise	3-7
15	3.3.6.1 Definition	3-7
16	3.3.6.2 Method of Measurement	3-7
17	3.3.6.3 Minimum Standard	3-8
18	3.3.7 Residual Amplitude Modulation (AM).....	3-8
19	3.3.7.1 Definition	3-8
20	3.3.7.2 Method of Measurement	3-8
21	3.3.7.3 Minimum Standard	3-8
22	3.3.8 Modulation Distortion and Noise	3-8
23	3.3.8.1 Definition	3-8
24	3.3.8.2 Method of Measurement	3-8
25	3.3.8.3 Minimum Standard	3-8
26	3.4 Limitations on Emissions	3-9
27	3.4.1 Spectrum Noise Suppression - Broadband.....	3-9
28	3.4.1.1 Definition	3-9
29	3.4.1.2 Method of Measurement	3-9
30	3.4.1.3 Minimum Standard	3-9
31	3.4.2 Harmonic and Spurious Emissions (Conducted)	3-10

CONTENTS

1	3.4.2.1 Definition.....	3-10
2	3.4.2.2 Method of Measurement.....	3-10
3	3.4.2.3 Minimum Standard.....	3-10
4	3.4.3 Harmonic and Spurious Emissions (Radiated)	3-10
5	3.4.3.1 Definition.....	3-10
6	3.4.3.2 Method of Measurement.....	3-10
7	3.4.3.3 Minimum Standard.....	3-10
8	3.4.4 Transmitter Intermodulation Spurious Emissions	3-11
9	3.4.4.1 Definition.....	3-11
10	3.4.4.2 Method of Measurement.....	3-11
11	3.4.4.3 Minimum Standard.....	3-11
12	3.5 Cross Talk from Receiver	3-11
13	3.5.1 Definition.....	3-11
14	3.5.2 Method of Measurement	3-11
15	3.5.3 Minimum Standard.....	3-12
16	4 ANALOG ENVIRONMENTAL REQUIREMENTS	4-1
17	4.1 Temperature and Power Supply Voltage	4-1
18	4.1.1 Definition.....	4-1
19	4.1.2 Method of Measurement	4-1
20	4.1.3 Minimum Standard.....	4-2
21	4.2 High Humidity	4-2
22	4.2.1 Definition.....	4-2
23	4.2.2 Method of Measurement	4-2
24	4.2.3 Minimum Standard.....	4-3
25	5 STANDARD RADIATED SIGNAL MEASUREMENT PROCEDURE	5-1
26	5.1 Standard Radiation Test Site	5-1
27	5.2 Search Antenna	5-1
28	5.3 Field-Strength Measurement	5-2
29	5.4 Frequency Range of Measurements.....	5-2
30	5.5 30-Meter Test Range.....	5-2
31	5.6 3-Meter Test Range.....	5-2

CONTENTS

1	5.7 Radiated Signal Measurement Procedures	5-3
2	6 ANALOG STANDARD TEST CONDITIONS	6-1
3	6.1 Standard Equipment.....	6-1
4	6.1.1 Basic Equipment.....	6-1
5	6.1.2 Associated Equipment	6-1
6	6.2 Standard Environmental Test Conditions	6-1
7	6.3 Standard Conditions for the Primary Power Supply	6-1
8	6.3.1 General	6-1
9	6.3.2 Standard DC Test Voltage from Accumulator Batteries	6-1
10	6.3.3 Standard AC Voltage and Frequency	6-2
11	6.4 Standard RF Signal Source	6-2
12	6.4.1 Standard RF Signal Source	6-2
13	6.4.2 Reserved	6-2
14	6.5 Standard RF Output Load	6-2
15	6.5.1 Standard External Transmitter Output Load	6-2
16	6.5.2 Reserved	6-2
17	6.6 Standard Measurement Equipment	6-3
18	6.6.1 General Equipment	6-3
19	6.6.2 Standard Test Source	6-3
20	6.6.3 Standard Test Receiver	6-3
21	6.6.4 Spectrum Analyzer or Measuring Receiver	6-4
22	6.7 Standard Duty Cycle	6-4
23	7 RESERVED	7-1
24	8 RESERVED	8-1
25	9 CDMA RECEIVER MINIMUM STANDARDS.....	9-1
26	9.1 Frequency Requirements	9-1
27	9.1.1 Frequency Coverage	9-1
28	9.1.2 Reserved	9-1
29	9.2 Mobile Station Access Probe Acquisition.....	9-1
30	9.2.1 Definition	9-1
31	9.2.2 Method of Measurement.....	9-1

CONTENTS

1	9.2.3 Minimum Standard	9-2
2	9.3 Demodulation Requirements	9-3
3	9.3.1 Performance in Additive Noise (Reverse Traffic Channel)	9-3
4	9.3.1.1 Definition	9-3
5	9.3.1.2 Method of Measurement	9-3
6	9.3.1.3 Minimum Standard	9-4
7	9.3.2 Performance in Multipath Fading (Reverse Traffic Channel)	9-4
8	9.3.2.1 Definition	9-4
9	9.3.2.2 Method of Measurement	9-4
10	9.3.2.3 Minimum Standard	9-5
11	9.4 Receiver Performance	9-7
12	9.4.1 Receiver Sensitivity	9-7
13	9.4.1.1 Definition	9-7
14	9.4.1.2 Method of Measurement	9-7
15	9.4.1.3 Minimum Standard	9-7
16	9.4.2 Receiver Dynamic Range	9-7
17	9.4.2.1 Definition	9-7
18	9.4.2.2 Method of Measurement	9-7
19	9.4.2.3 Minimum Standard	9-8
20	9.4.3 Single Tone Desensitization	9-8
21	9.4.3.1 Definition	9-8
22	9.4.3.2 Method of Measurement	9-8
23	9.4.3.3 Minimum Standard	9-8
24	9.4.4 Intermodulation Spurious Response Attenuation	9-9
25	9.4.4.1 Definition	9-9
26	9.4.4.2 Method of Measurement	9-9
27	9.4.4.3 Minimum Standard	9-9
28	9.4.5 Reverse Link Power Control	9-9
29	9.5 Limitations on Emissions	9-10
30	9.5.1 Conducted Spurious Emissions	9-10
31	9.5.1.1 Definition	9-10

CONTENTS

1	9.5.1.2 Method of Measurement	9-10
2	9.5.1.3 Minimum Standard	9-10
3	9.5.2 Radiated Spurious Emissions	9-10
4	9.6 Received Signal Strength Indicator (RSSI)	9-10
5	9.6.1 Definition	9-10
6	9.6.2 Method of Measurement	9-11
7	9.6.3 Minimum Standard	9-11
8	10 CDMA TRANSMITTER MINIMUM STANDARDS	10-1
9	10.1 Frequency Requirements	10-1
10	10.1.1 Frequency Coverage	10-1
11	10.1.2 Frequency Tolerance	10-1
12	10.1.2.1 Definition	10-1
13	10.1.2.2 Method of Measurement	10-1
14	10.1.2.3 Minimum Standard	10-1
15	10.2 Reserved	10-1
16	10.3 Modulation Requirements	10-1
17	10.3.1 Synchronization and Timing	10-2
18	10.3.1.1 Pilot Time Tolerance	10-2
19	10.3.1.1.1 Definition	10-2
20	10.3.1.1.2 Method of Measurement	10-2
21	10.3.1.1.3 Minimum Standard	10-2
22	10.3.1.2 Pilot Channel to Code Channel Time Tolerance	10-2
23	10.3.1.2.1 Definition	10-2
24	10.3.1.2.2 Method of measurement	10-3
25	10.3.1.2.3 Minimum Standard	10-3
26	10.3.1.3 Pilot Channel to Code Channel Phase Tolerance	10-3
27	10.3.1.3.1 Definition	10-3
28	10.3.1.3.2 Method of measurement	10-3
29	10.3.1.3.3 Minimum Standard	10-3
30	10.3.2 Waveform Quality	10-3
31	10.3.2.1 Definition	10-3

CONTENTS

1	10.3.2.2 Method of measurement	10-3
2	10.3.2.3 Minimum Standard	10-4
3	10.3.3 Power Control Subchannel	10-4
4	10.3.3.1 Definition	10-4
5	10.3.3.2 Method of Measurement	10-4
6	10.3.3.3 Minimum Standard	10-4
7	10.4 RF Output Power Requirements	10-5
8	10.4.1 Total Power	10-5
9	10.4.1.1 Definition	10-5
10	10.4.1.2 Method of Measurement	10-5
11	10.4.1.3 Minimum Standard	10-5
12	10.4.2 Reserved	10-6
13	10.4.3 Pilot Power	10-6
14	10.4.3.1 Definition	10-6
15	10.4.3.2 Method of Measurement	10-6
16	10.4.3.3 Minimum Standard	10-6
17	10.4.4 Code Domain Power	10-6
18	10.4.4.1 Definition	10-6
19	10.4.4.2 Method of Measurement	10-6
20	10.5 Limitations on Emissions	10-7
21	10.5.1 Conducted Spurious Emissions	10-7
22	10.5.1.1 Definition	10-7
23	10.5.1.2 Method of Measurement	10-7
24	10.5.1.3 Minimum Standard	10-7
25	10.5.1.3.1 Suppression Inside Cellular Band	10-7
26	10.5.1.3.2 Suppression Outside Cellular Band	10-7
27	10.5.2 Radiated Spurious Emissions	10-8
28	10.5.2.1 Definition	10-8
29	10.5.2.2 Method of Measurement	10-8
30	10.5.2.3 Minimum Standard	10-8
31	11 CDMA ENVIRONMENTAL REQUIREMENTS	11-1

CONTENTS

1	11.1 Temperature and Power Supply Voltage	11-1
2	11.1.1 Definition	11-1
3	11.1.2 Method of Measurement	11-1
4	11.1.3 Minimum Standard	11-1
5	11.2 High Humidity	11-2
6	11.2.1 Definition	11-2
7	11.2.2 Method of Measurement	11-2
8	11.2.3 Minimum Standard	11-2
9	12 CDMA STANDARD TEST CONDITIONS	12-1
10	12.1 Standard Equipment	12-1
11	12.1.1 Basic Equipment	12-1
12	12.1.2 Associated Equipment	12-1
13	12.2 Standard Environmental Test Conditions	12-1
14	12.3 Standard Conditions for the Primary Power Supply	12-1
15	12.3.1 General	12-1
16	12.3.2 Standard DC Test Voltage from Accumulator Batteries	12-1
17	12.3.3 Standard AC Voltage and Frequency	12-2
18	12.4 Standard Test Equipment	12-2
19	12.4.1 Channel Simulator	12-2
20	12.4.2 Waveform Quality Measurement Equipment	12-4
21	12.4.2.1 r-Meter	12-4
22	12.4.2.2 Code Domain Measurement Equipment	12-7
23	12.4.3 Mobile Station Simulator	12-8
24	12.4.4 AWGN Generator	12-9
25	12.4.5 CW Generator	12-9
26	12.4.6 Spectrum Analyzer	12-9
27	12.4.7 Average Power Meter	12-10
28	12.4.8 RF Output Load	12-10
29	12.5 Test Setups	12-11
30	12.5.1 Functional System Setups	12-11
31	12.5.2 Test Model for Base Station	12-15

CONTENTS

1	12.6 Standard Duty Cycle	12-15
2	12.7 Frame Error Rate Measurement	12-16
3	12.8 Confidence Limits	12-16

FIGURES

1	10.3.3.3-1(a)	Power Up Command Measurement Interval	10-5
2	10.3.3.3-1(b)	Power Down Command Measurement Interval	10-5
3	12.4.1-1	Autocorrelation Function of the Phase	12-3
4	12.5.1-1	Functional Setup for Base Station Additive Noise Demodulation	
5		Tests and Sensitivity Tests	12-12
6	12.5.1-2	Functional Setup for Base Station Multipath Fading Tests	12-12
7	12.5.1-3	Functional Setup for Base Station Desensitization Tests	12-13
8	12.5.1-4	Functional Setup for Base Station Intermodulation Spurious	
9		Response Tests	12-13
10	12.5.1-5	Functional Setup for Waveform Quality Test	12-14
11	12.5.1-6	Functional Setup for Code Domain Power Test	12-14
12	12.8-1	Rate Ratio (λ_N/λ_{lim}) Bound as a Function of Number of	
13		Errors (K) for 95% Confidence	12-19

TABLES

1	1.3.1-1	Channel Numbers and Frequencies	1-3
2	2.3.5.3-1	Bit-Error-Rate Performance	2-11
3	2.5.3-1	Maximum Allowable Radiated Spurious Emission	2-12
4	3.3.2.2.3-1	Transmit-Audio Response	3-5
5	9.2.3-1	Maximum Access Probe Failure Rates	9-2
6	9.3-1	Parameters for Demodulation Tests	9-3
7	9.3.1.3-1	Maximum FER for Receiver Demodulation Performance	
8		Tests in Additive Noise	9-4
9	9.3.2.3-1(a)	Maximum FER for Receiver Demodulation Performance	
10		Tests in Multipath Fading, Case 2a	9-5
11	9.3.2.3-1(b)	Maximum FER for Receiver Demodulation Performance	
12		Tests in Multipath Fading, Case 2b	9-6
13	9.3.2.3-1(c)	Maximum FER for Receiver Demodulation Performance	
14		Tests in Multipath Fading, Case 2c	9-6
15	9.3.2.3-1(d)	Maximum FER for Receiver Demodulation Performance	
16		Tests in Multipath Fading, Case 2d	9-6
17	9.6.3-1	Bounds on RSSI Reports	9-12
18	11.1.3-1	Environmental Test Limits	11-2
19	12.4.1-1	Standard Channel Simulator Configurations	12-4
20	12.4.2.1-1	Accuracy of Waveform Quality Measurement Equipment	12-7
21	12.4.2.2-1	Accuracy of Code Domain Measurement Equipment	12-8
22	12.5.2-1	Base Station Test Model, Nominal	12-15
23	12.5.2-2	Base Station Test Model, General	12-15
24	12.8-1	Fixed-Length Test Sizes (Trials)	12-17
25	12.8-2	Trial Count (N) Thresholds for 95% Confidence	12-19
26			

1 INTRODUCTION

1.1 Scope

These standards detail definitions, methods of measurement, and minimum performance requirements for 800-MHz Cellular Base Stations supporting dual-mode mobile stations. These standards share the purpose of IS-95, "Mobile Station-Base Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular System" (and subsequent revisions thereof) by assuring that a mobile station can obtain service in any cellular system that meets the compatibility requirements of IS-95.

Compatibility, as used in connection with these standards and IS-95, is understood to mean that any mobile station is able to place and receive calls in any cellular system. Conversely, all cellular systems are able to place and receive calls with any mobile station.

To assure compatibility, it is essential that both radio-system parameters and call-processing parameters be specified. The speech-filtering, modulation, and RF-emission parameters commonly encountered in two-way radio systems have been updated and expanded to reflect the unique radio plan upon which cellular systems are based. The sequence of call-processing steps that the mobile station and base station execute to establish calls has been specified in IS-95 along with the digital control messages and analog signals that are exchanged between the two stations.

Although the basic purpose of cellular telecommunications has been voice communication, evolving usages (e.g., data) may allow the omission of some of the features specified herein provided that the system compatibility is not compromised.

These standards concentrate specifically on the base station radio transmitting and receiving equipment; they cover the operation of the base station and the mobile switching center only to the extent that compatibility with IS-95 is assured.

Test methods are recommended in this document. However, methods other than those recommended may suffice for the same purpose.

1.2 General Description of Cellular Mobile Telephone System

The system is designed to supply mobile telephone service using a "cellular" radio coverage plan.

The mobile station communicates with a distributed array of base stations. The base stations are controlled by the mobile switching center which provides connection to the world-wide telecommunications network. A call between the land network and a mobile station is routed via the mobile switching center to the base stations that best serve the location of the mobile station. A call in progress can proceed indefinitely as the mobile station moves from one base station coverage area to another base station coverage area since the call is automatically reassigned to the next base station resources.

Some of the communication resources within each base station are dedicated to the control of the mobile station. These include locating a particular mobile station, processing a mobile station originated call, and performing other system control functions.

1 **10.5 Limitations on Emissions**

2 10.5.1 Conducted Spurious Emissions

3 10.5.1.1 Definition

4 Conducted spurious emissions are emissions at frequencies that are outside the assigned
5 CDMA Channel, measured at the base station RF output port.

6 10.5.1.2 Method of Measurement

- 7 1. Connect a spectrum analyzer (or other suitable test equipment) to the base station
8 RF output port, using an attenuator or directional coupler if necessary.
- 9 2. Set the base station to transmit a signal modulated with a combination of Pilot,
10 Sync, Paging, and Traffic Channels as stated in 12.5.2. Total power at the RF
11 output port shall be the nominal power as specified by the manufacturer.
- 12 3. Measure the power level at the carrier frequency.
- 13 4. Sweep the spectrum analyzer over a frequency range from the lowest frequency
14 generated in the equipment or 1 MHz, whichever is lower, to the tenth harmonic of
15 the carrier frequency.

16 10.5.1.3 Minimum Standard

17 10.5.1.3.1 Suppression Inside Cellular Band

18 For all frequencies within the cellular base station transmit band between 869 and 894
19 MHz which are also within the specific bands allocated to the operator's system, the total
20 spurious emissions measured in a 30 kHz resolution bandwidth shall be attenuated below
21 the mean output power level in accordance with the following schedule:

- 22 (a) For offset frequencies greater than 750 kHz from the CDMA Channel center
23 frequency, at least 45 dB
- 24 (b) For offset frequencies greater than 1.98 MHz from the CDMA Channel center
25 frequency, at least 60 dB

26 For all frequencies not within the specific bands allocated to the operator's system, the total
27 spurious emissions measured in a 30 kHz resolution bandwidth shall not exceed a level of
28 60 dB below the mean output power level or -13 dBm, whichever is smaller.

29 10.5.1.3.2 Suppression Outside Cellular Band

30 Current FCC rules shall apply.