Exhibit 6A1

800 MHz AMPS RF POWER OUTPUT

Para. 2.1033 (c,6,7), 2.1046 and 22.913 (a)

The RF power measured at the output terminals (antenna connector) is plotted against supply voltage variation and temperature variations at the highest levels.

Exhibit	Voltage (V)	Temperature	TX Freq	Power Level
6A2	3.8	Varied	Mid Band	0
6A3	Varied	+25 C	Mid Band	0

The measurements were made per IS 137 using the following equipment:

HP EPM-441A Power Meter (S/N: US37480855)
HP 66309B Dual Output Mobile Comm. DC Source (S/N: US39050133)
ESPEC Temperature Chamber S/N: (91004533)

EFFECTIVE RADIATED POWER

The following is a description of the substitution method used in accordance with IS-137A to obtain accurate EDRP readings at the carrier fundamental frequency:

The unit under test is placed 3 m away from the measurement antenna in vertical position. The measurements are made by using calibrated antennas and equipment with known cable losses.
A maximized measurement is made by raising and lowering the measurement antenna and rotating the EUT 360 degrees. Horizontal and vertical polarization data is recorded as reference.
A generator, an amplifier and a half-wave dipole antenna are then substituted for the EUT.
Data obtained with known power levels into the substitution antenna are then compared to the reference reading. The EDRP of the product is calculated.

Table: EDRP

Mode	f (MHz)	Radiated (dBm/mW)
AMPS	824	25.8/380.2
	836	25.4/346.7
	849	24.8/302.0

Exhibit 6A2

AMPS 800 RF Power vs Temperature

TestCaseName	Channel	Temp.	Volt	Power (dBm)
AMPS 800 RF Power	Mid band	-30	3.8	26.267
AMPS 800 RF Power	Mid band	-20	3.8	26.058
AMPS 800 RF Power	Mid band	-10	3.8	26.195
AMPS 800 RF Power	Mid band	0	3.8	25.951
AMPS 800 RF Power	Mid band	10	3.8	25.962
AMPS 800 RF Power	Mid band	20	3.8	26.255
AMPS 800 RF Power	Mid band	30	3.8	26.179
AMPS 800 RF Power	Mid band	40	3.8	25.9
AMPS 800 RF Power	Mid band	50	3.8	25.837
AMPS 800 RF Power	Mid band	60	3.8	25.749

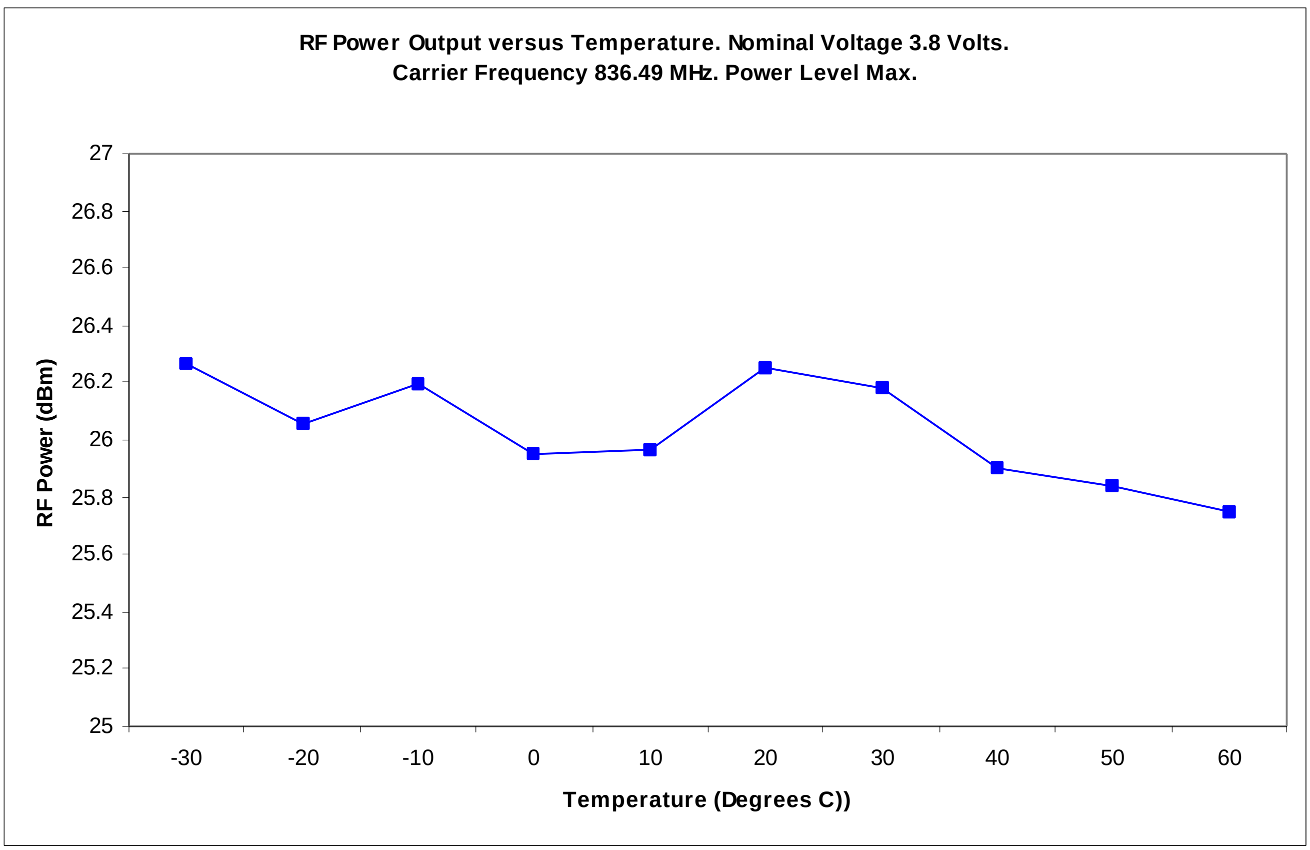


Exhibit 6A3

AMPS 800 RF Power vs Voltage

Test Case Name	Channel	Volt.	Temp. C	Power (dBm)
AMPS 800 RF Power	Mid Band	3.4	25	26.433
AMPS 800 RF Power	Mid Band	3.5	25	26.468
AMPS 800 RF Power	Mid Band	3.6	25	26.495
AMPS 800 RF Power	Mid Band	3.7	25	26.601
AMPS 800 RF Power	Mid Band	3.8	25	26.476
AMPS 800 RF Power	Mid Band	3.9	25	26.55
AMPS 800 RF Power	Mid Band	4	25	26.534
AMPS 800 RF Power	Mid Band	4.1	25	26.429
AMPS 800 RF Power	Mid Band	4.2	25	26.492

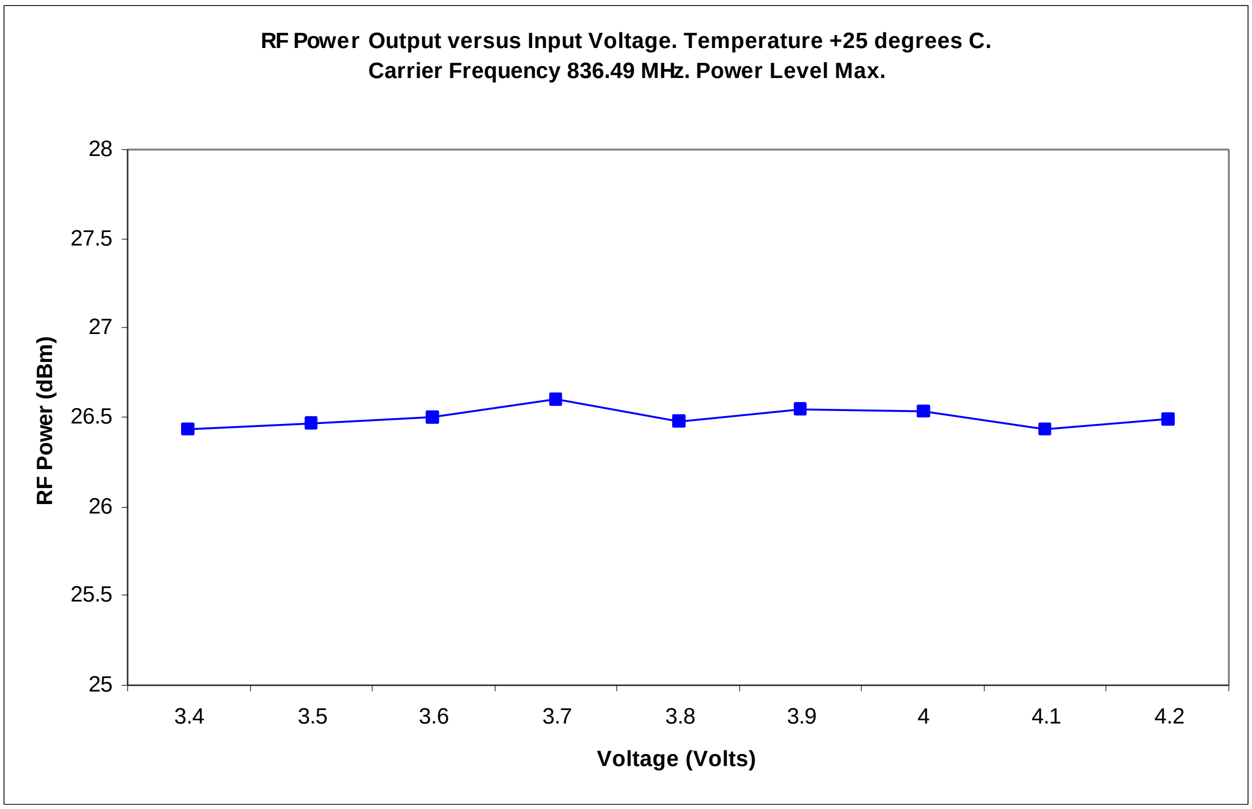


Exhibit 6B1

800 MHz AMPS MODULATION CHARACTERISTICS

Part 2.1047 and 22.915
The frequency and amplitude response to audio inputs measured per IS-137A are shown on the following diagrams:

Exhibit #	Description	Clause
6B2	Transmit Audio Frequency Response	2.1047 (a,b)
6B3	Post Limiter Filter Attenuation	22.915 (d)
6B4	Modulation Limiting vs. Input Voltage	2.1047, 22.915 (b,1)

The measurements were made per IS-137A using the following equipment:

HP 8901B Modulation Analyzer (S/N: 3226A03982)
HP 8903B Audio Analyzer (S/N: 3011A114448)
HP EPM-441A Power Meter (S/N: 3226A03982)
Anritzu 35665A Dynamic Signal Analyzer (S/N: 3603A03838)

Exhibit 6B2

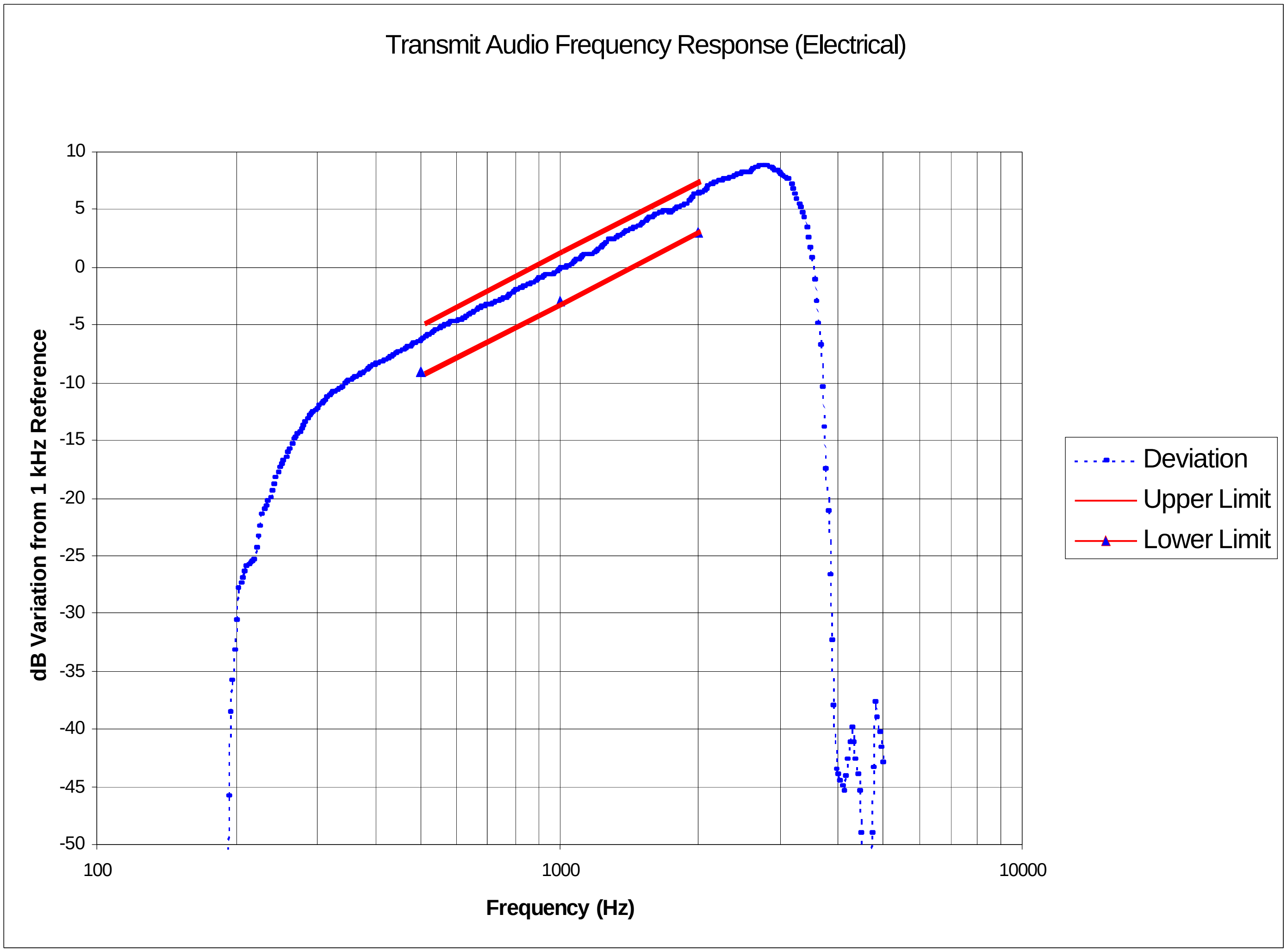

Transmit Audio Frequency Response (Electrical)
dB Variation from 1 kHz Reference
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
100
1000
10000
Frequency (Hz)
Deviation
Upper Limit
Lower Limit

Exhibit 6B3

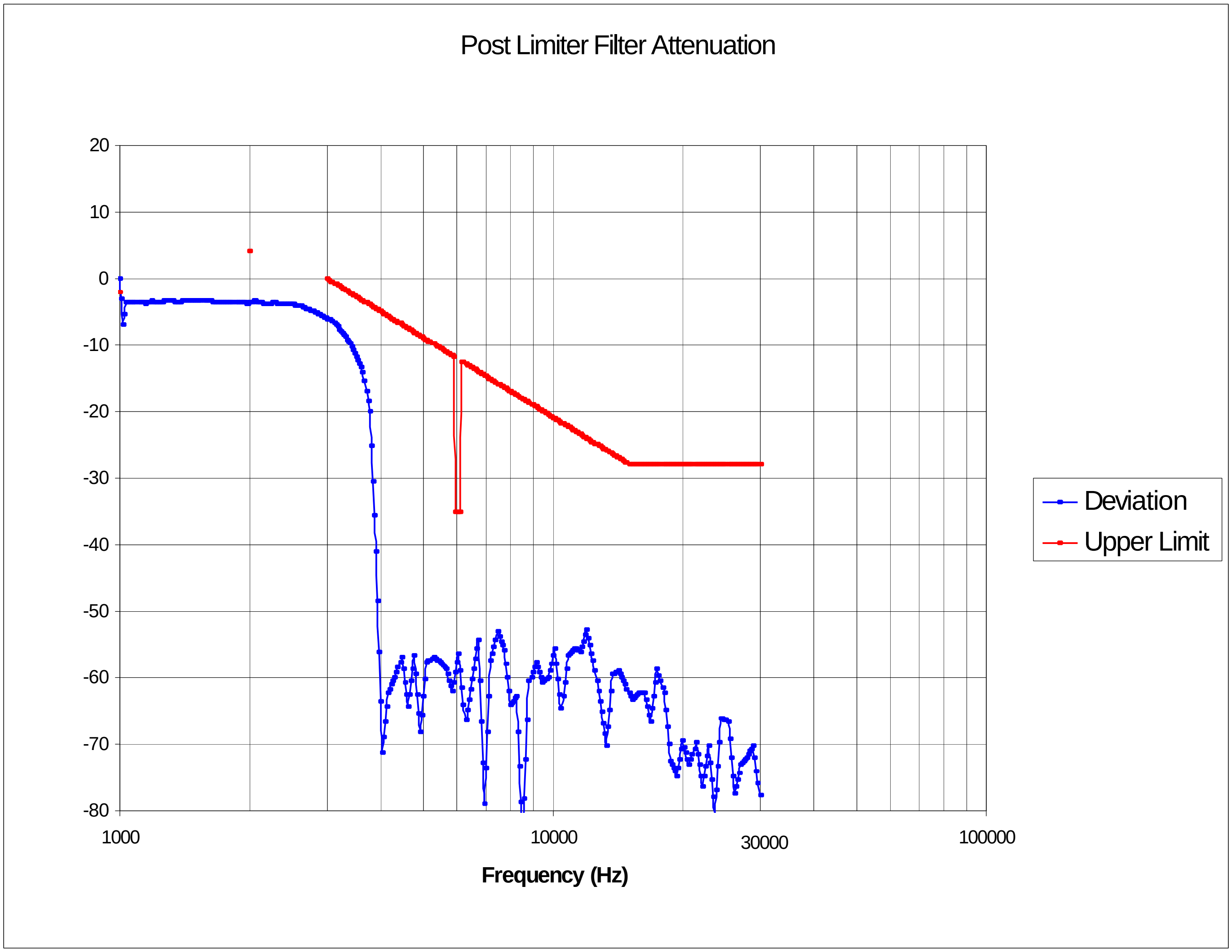

Post Limiter Filter Attenuation
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1000
10000
30000
100000
Frequency (Hz)
Deviation
Upper Limit

Exhibit 6B4

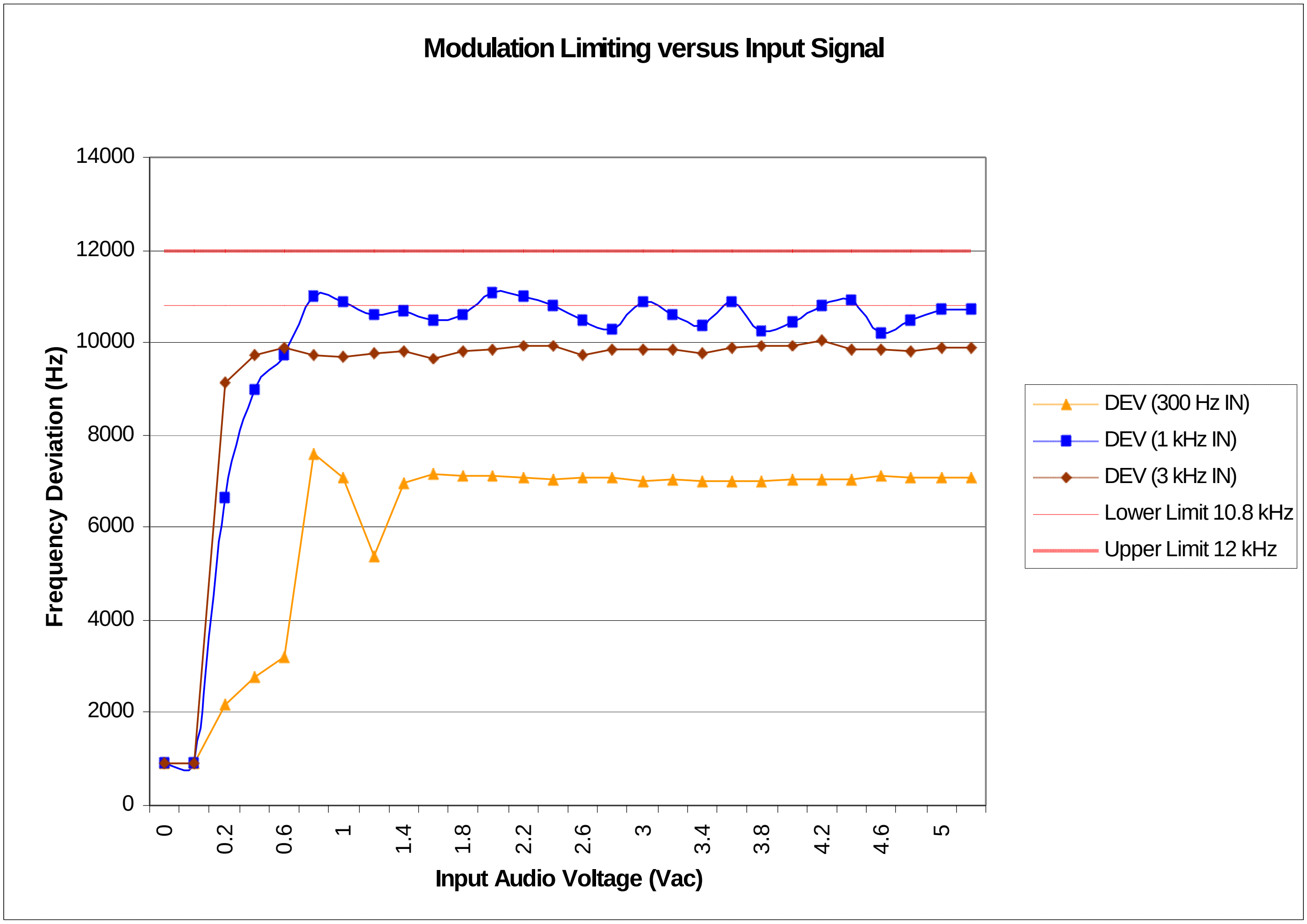

Modulation Limiting versus Input Signal
Frequency Deviation (Hz)
14000
12000
10000
8000
6000
4000
2000
0
0
0.2
0.6
1
1.4
1.8
2.2
2.6
3
3.4
3.8
4.2
4.6
5
Input Audio Voltage (Vac)
DEV (300 Hz IN)
DEV (1 kHz IN)
DEV (3 kHz IN)
Lower Limit 10.8 kHz
Upper Limit 12 kHz

Exhibit 6C1

800 MHz AMPS OCCUPIED BANDWIDTH

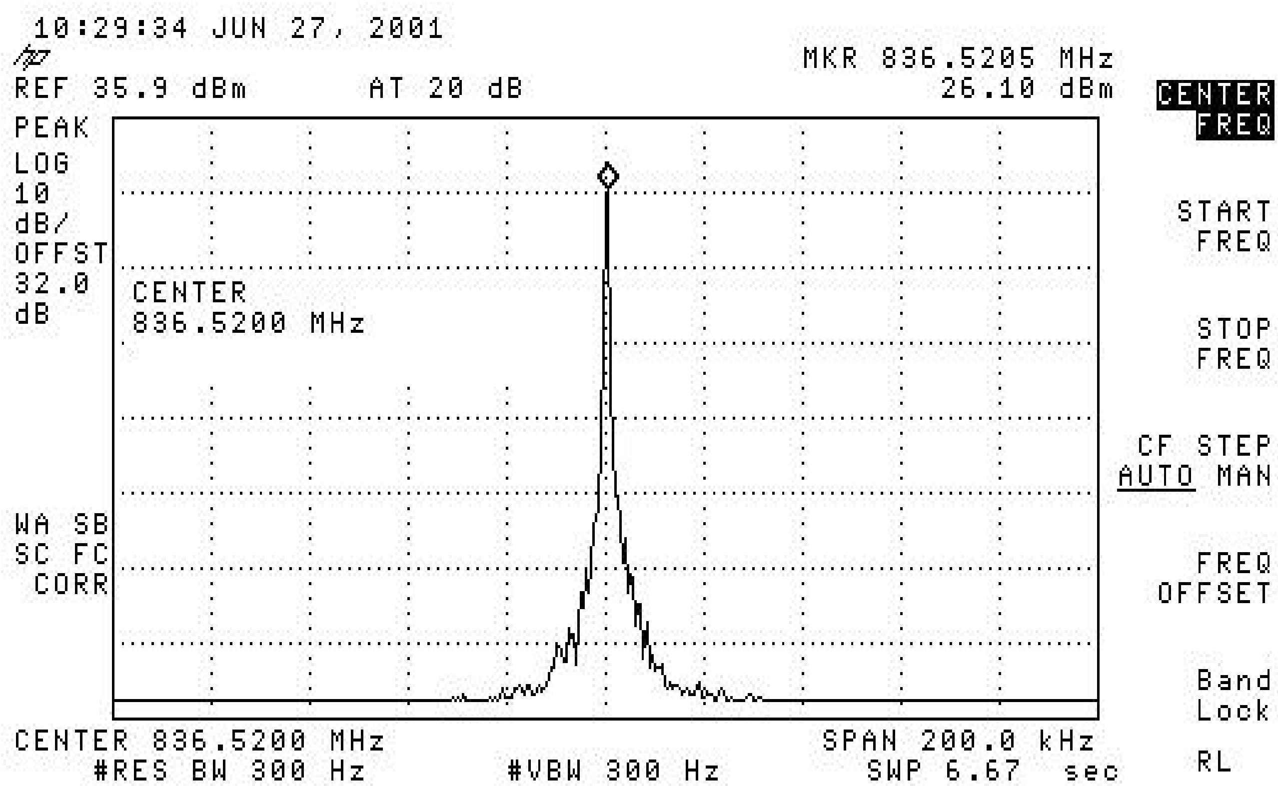
Part 2.1049 and 22.917 the exhibits presented show the modulations that co-exist in a cellular system:

Exhibit #	Description	Power Level	Clause
6C2	Unmodulated Carrier	0	22.917(b)
6C3	Voice w/ Carrier	0	22.917(b)
6C4	SAT w/ Carrier	0	22.917(b)
6C5	Signal Tone w/ Carrier	0	22.917(b)
6C6	10kb/s Wideband Data w/ Carrier	0	22.917(d)

These measurements wee made per IS-137A using the following equipment:

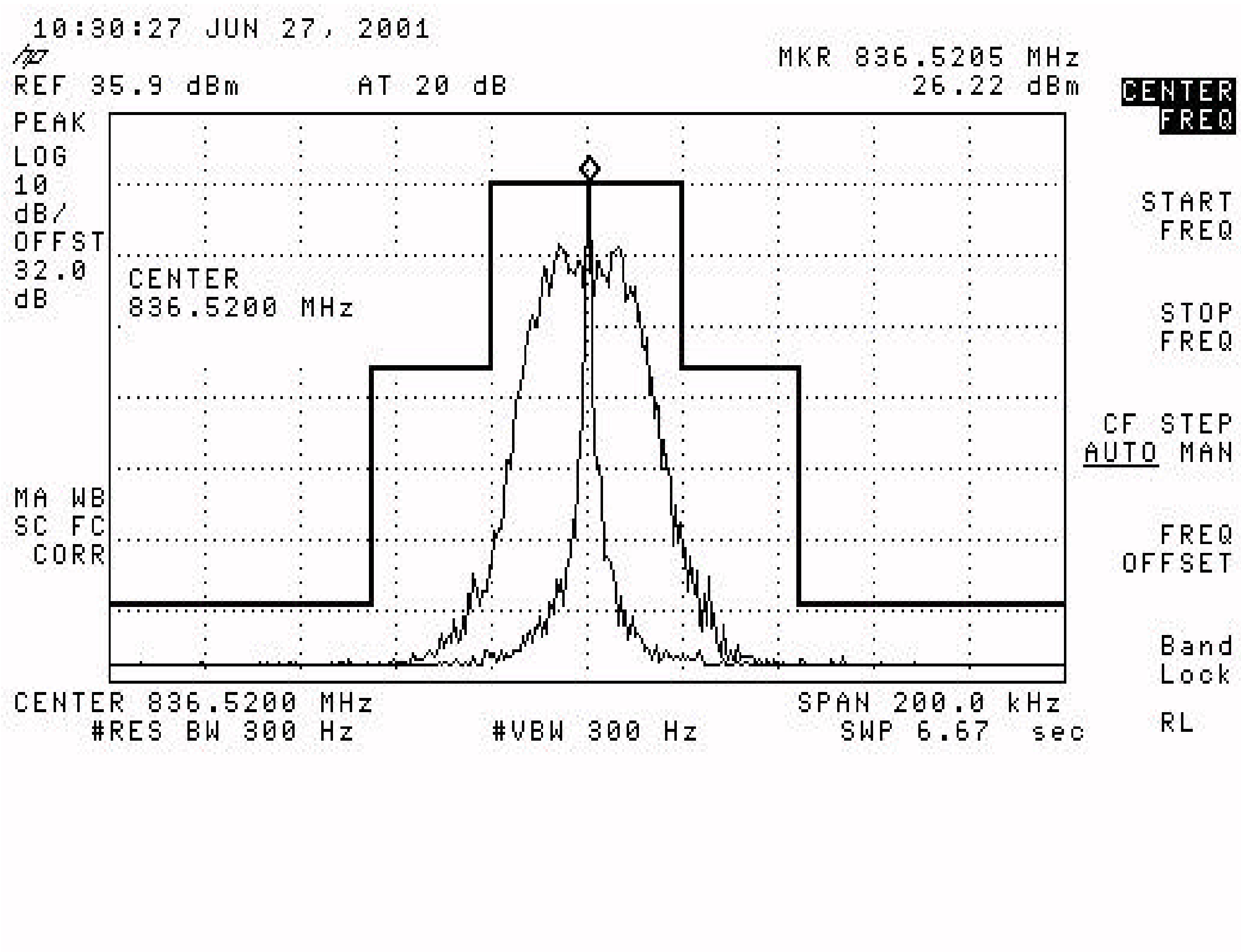
HP E7405A EMC Spectrum Analyzer 9 kHz – 26.5 GHz (S/N: US39150143)
HP EPM-441A Power Meter (S/N: US37480855)
HP 66309B Dual Output Mobile Comm. DC Source (S/N: US39050133)
HP 8901B Modulation Analyzer (S/N: 3226A03982)
HP 8903B Audio Analyzer (S/N: 3011A114448)

Exhibit 6C2



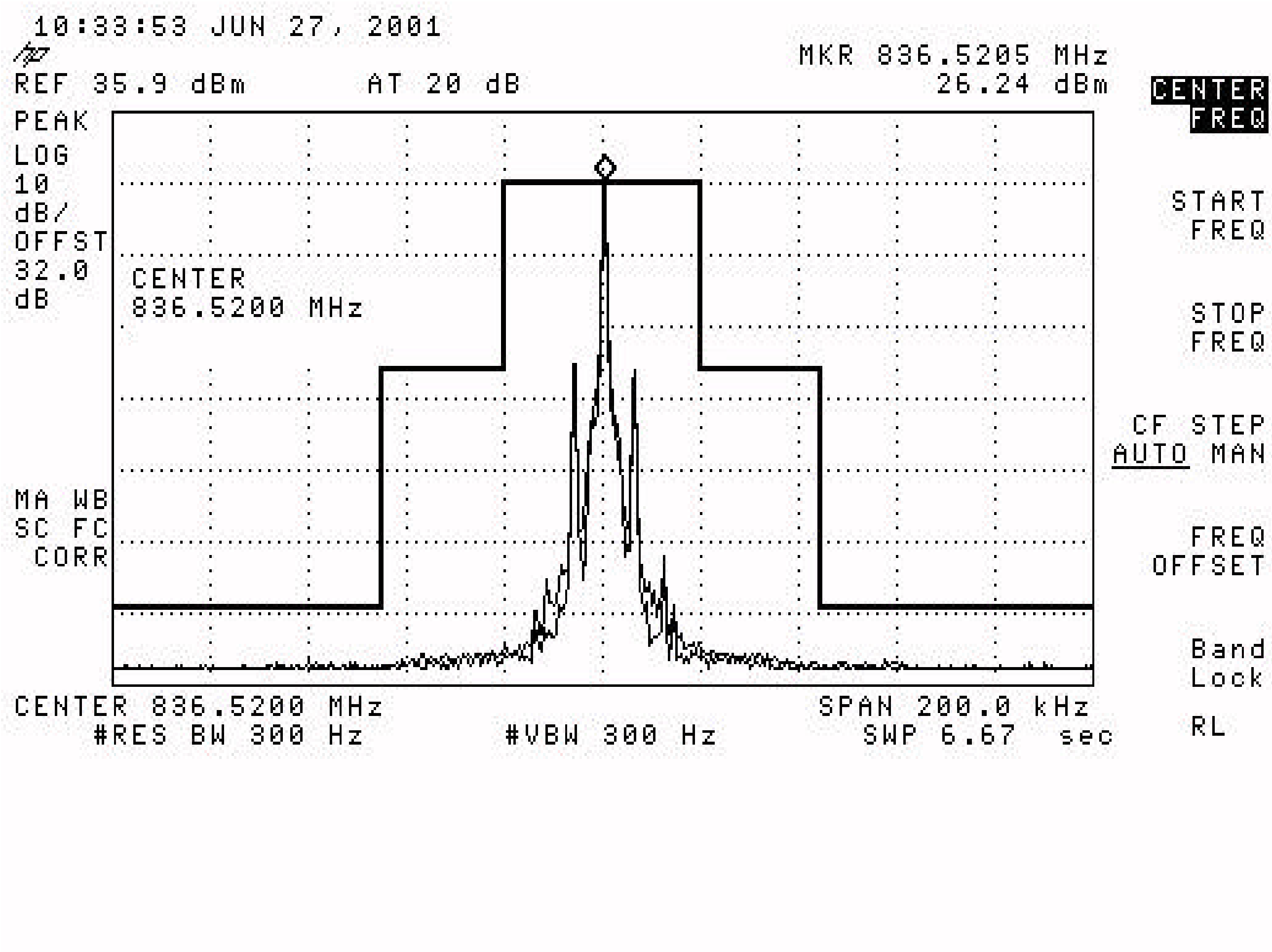
Unmodulated Carrier

Exhibit 6C3



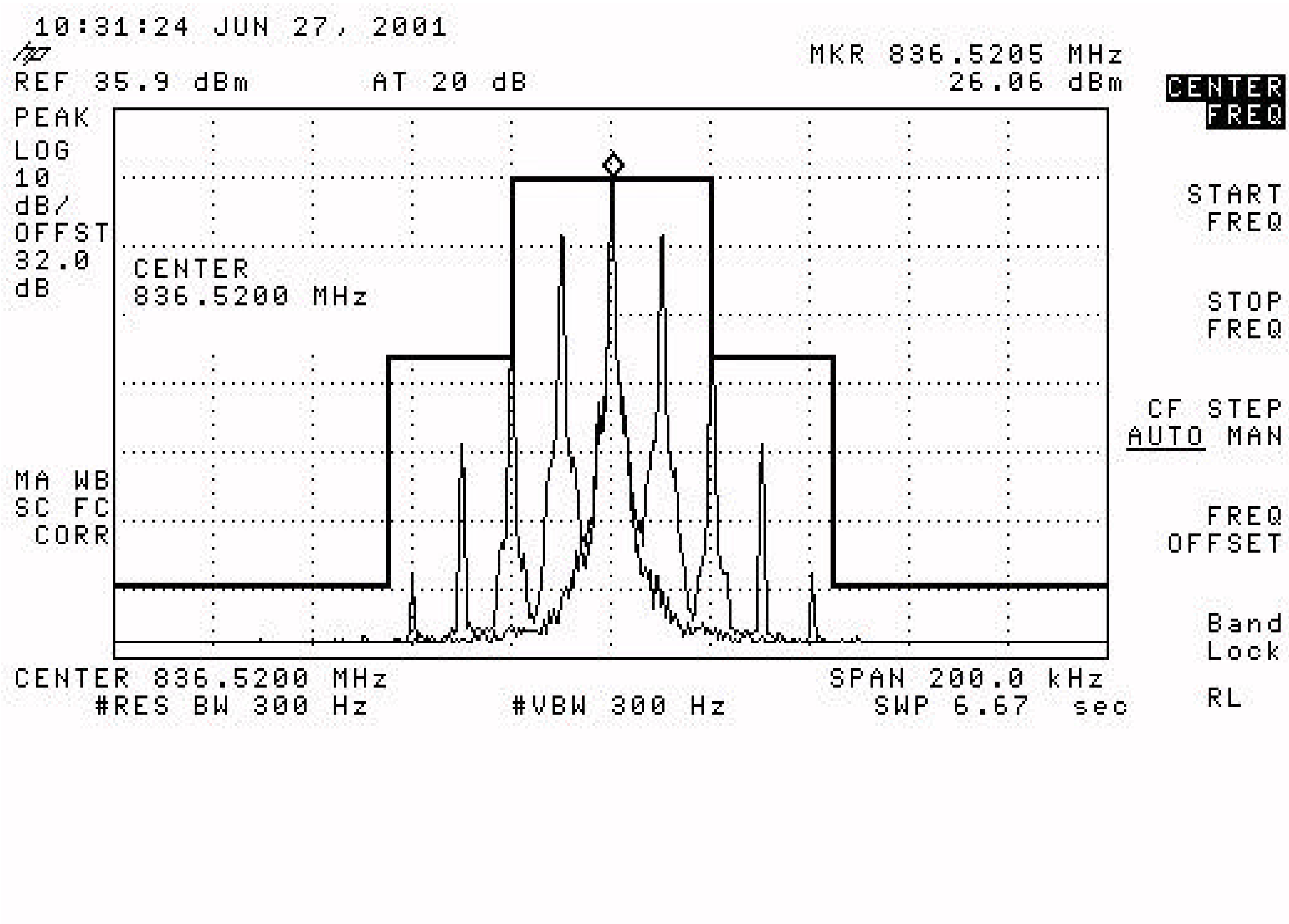
Voice with Unmodulated Carrier

Exhibit 6C4



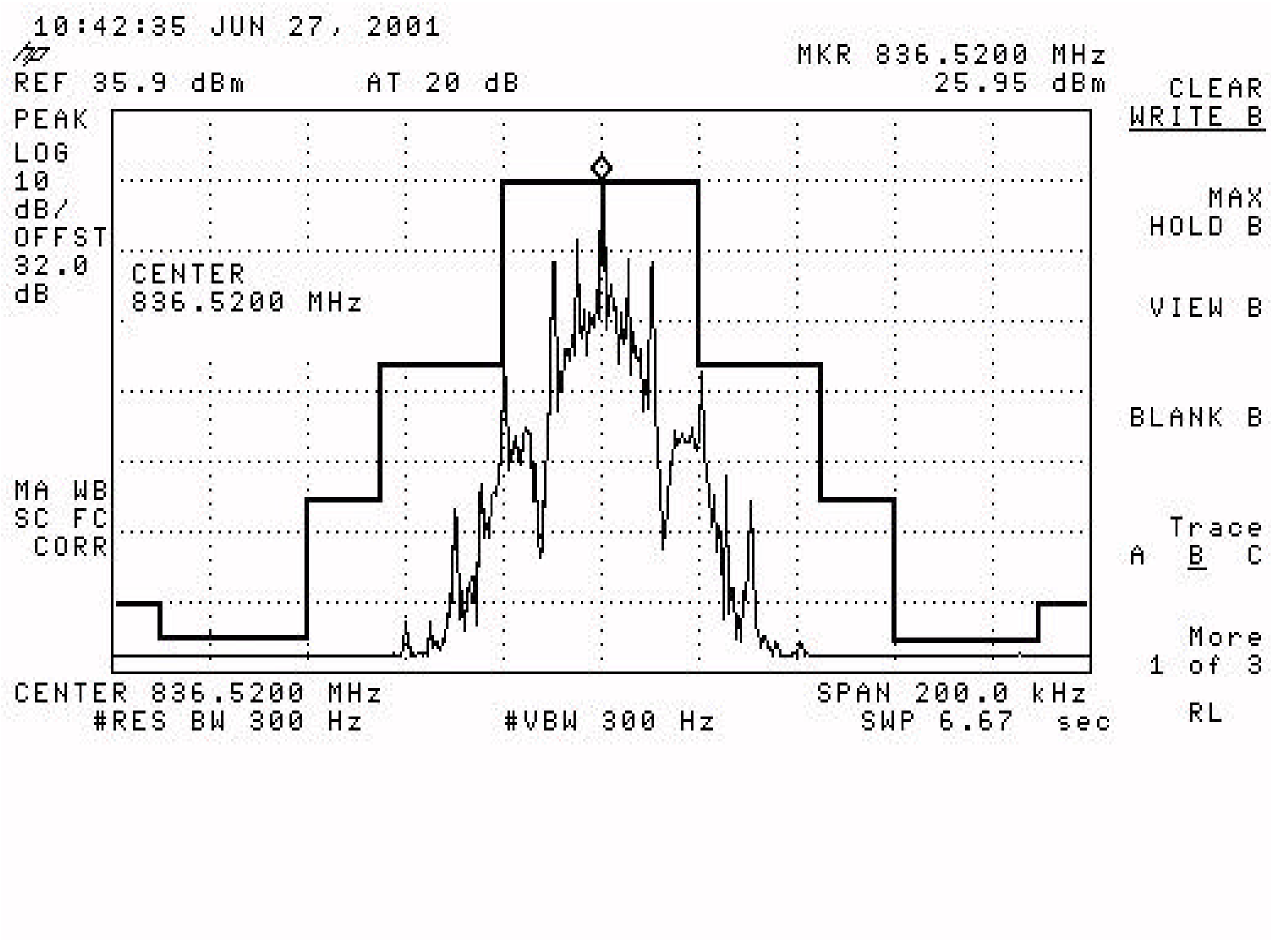
SAT with Unmodulated Carrier

Exhibit 6C5



Signal Tone with Unmodulated Carrier

Exhibit 6C6



10kb/s Wideband Data with Unmodulated Carrier

Exhibit 6D1

800 MHz AMPS SPURIOUS EMISSIONS (Conducted)

Per 2.1051, 22.917(e) Spurious emissions at the antenna terminals (conducted) when properly loaded with an appropriate artificial antenna were measured per IS-137A.

Per 22.917f, the mean power of any emissions from the mobile's transmit antenna connector does not exceed the –80 dBm level in the base station frequency range of 869 MHz to 894 MHz.

EXHIBIT #	FREQUENCY	Output Power level
6D2	Low band	0
6D3	Low band	7
6D4	Mid band	0; 22.917(f)

The measurements were taken out to the 10^{th} harmonic of the carrier.

The measurements were made per IS-137A using the following equipment:

HP E7405A EMC Spectrum Analyzer 9 kHz – 26.5 GHz (S/N: US39150143)
HP EPM-441A Power Meter (S/N: US37480855)
HP 66309B Dual Output Mobile Comm. DC Source (S/N: US39050133)

Exhibit 6D2

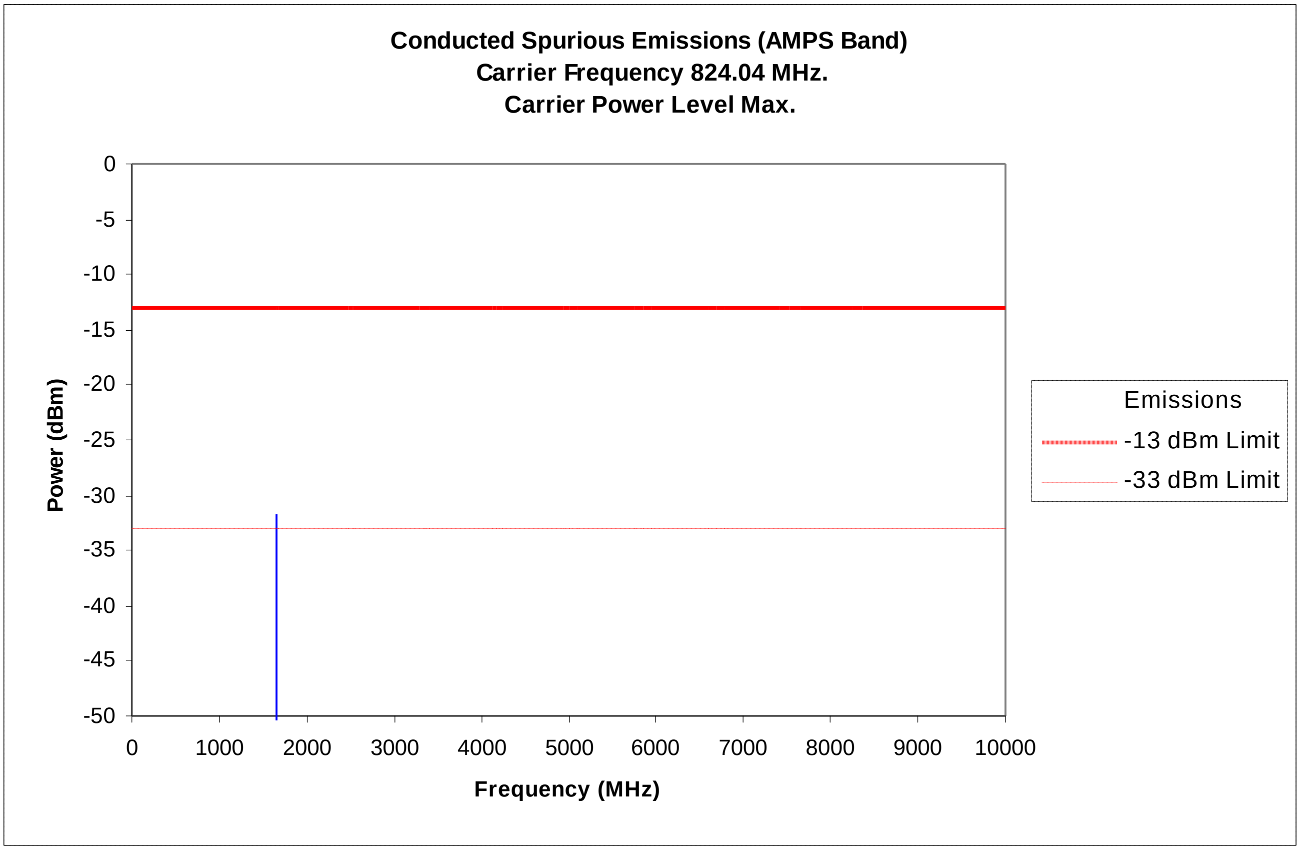
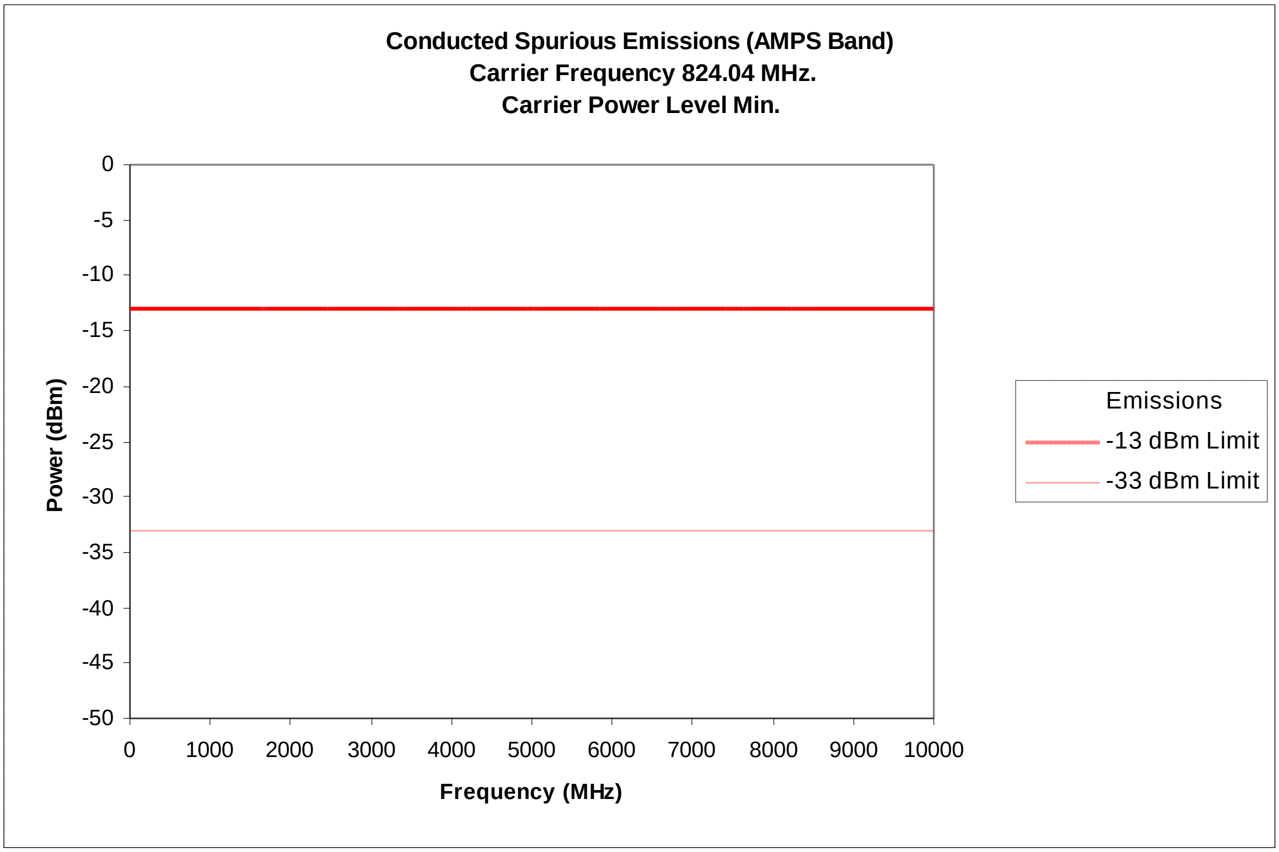

Conducted Spurious Emissions (AMPS Band)
Carrier Frequency 824.04 MHz.
Carrier Power Level Max.
Power (dBm)
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
0
1000
2000
3000
4000
5000
6000
7000
8000
9000
10000
Frequency (MHz)
Emissions
-13 dBm Limit
-33 dBm Limit

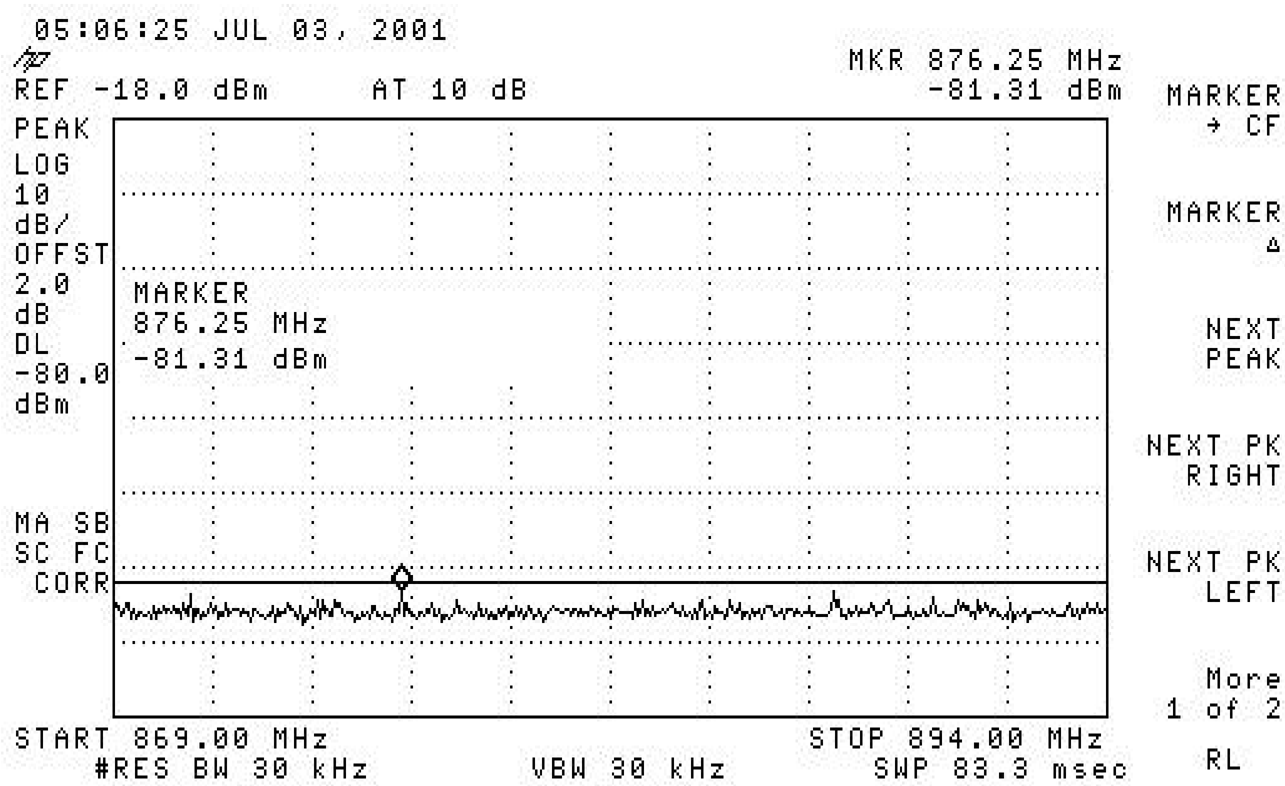
Exhibit 6D3



There is no emission to report within 20 dB of the limit specified.

Exhibit 6D4

Base Station Frequency Range



800 MHz AMPS SPURIOUS EMISSIONS (Radiated)

Per 2.1053 and 22.917 (e), field strength of spurious radiation was measured at Underwriters Laboratories Inc. Research Triangle Park, NC site. The measurement procedure is per EIA IS-137 conducted on a 3 meter test site. Results are shown on the following Exhibits.

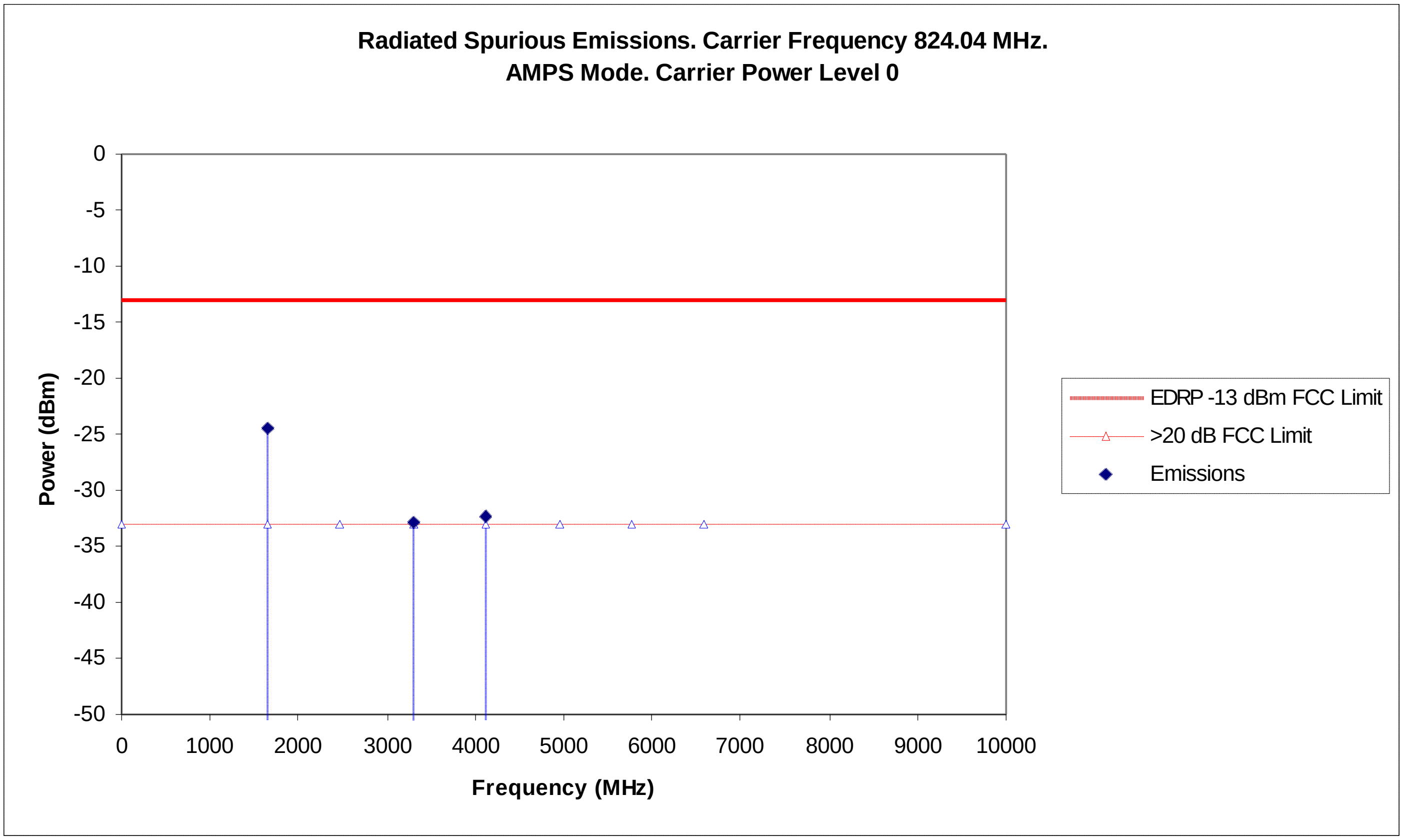
Note: The spectrum was examined through the 10^{th} harmonic of the carrier. Measurements recorded are maximum measurements.

EXHIBIT	FREQUENCY	OUTPUT POWER LEVEL
6E2	824.04 MHz	0

The measurements were made per IS-137A using the following equipment:

HP E7405A EMC Spectrum Analyzer 9 kHz – 26.5 GHz (S/N:SAR001)
HP EPM-441A Power Meter (S/N:PAR007)
HP 66309B Dual Output Mobile Comm. DC Source (S/N:ZPS004)
HP 83712B CW Signal Generator 10 MHz – 20 GHz (S/N:FGR002)

Exhibit 6E2



There is no emission to report within 20 dB of the limit specified.

Exhibit 6F1

800 MHz AMPS FREQUENCY STABILITY

Per 2.1055 (a)(1)(b)(d)(2), 22.355

EXHIBIT #	Voltage	Temperature
6F2	3.4 to 4.2 Volts (varied)	+25 C
6F3	3.8 Volts	Varied

Note: The manufacturers rated voltage for the battery is 3.4 VDC to 4.2 VDC.

The measurements were made per IS 137 using the following equipment:

HP 66309B Dual Output Mobile Comm. DC Source (S/N: US39050133)
HP 83712B CW Signal Generator 10 MHz – 20 GHz (S/N: US37100945)
Anritzu MT 8802A Radio Communications Analyzer 300 kHz – 3 GHz (S/N: MB25017)

Exhibit 6F2

AMPS 800 Frequency Stability vs. Voltage

Test Case Name	Channel	Volt.	Temp. C	Freq. Error (ppm)
AMPS 800 Frequency Stability	Mid Band	3.4	25	0.176021232
AMPS 800 Frequency Stability	Mid Band	3.5	25	0.176212507
AMPS 800 Frequency Stability	Mid Band	3.6	25	0.176236416
AMPS 800 Frequency Stability	Mid Band	3.7	25	0.176379873
AMPS 800 Frequency Stability	Mid Band	3.8	25	0.176344009
AMPS 800 Frequency Stability	Mid Band	3.9	25	0.176308145
AMPS 800 Frequency Stability	Mid Band	4	25	0.176140779
AMPS 800 Frequency Stability	Mid Band	4.1	25	0.176284235
AMPS 800 Frequency Stability	Mid Band	4.2	25	0.17586582

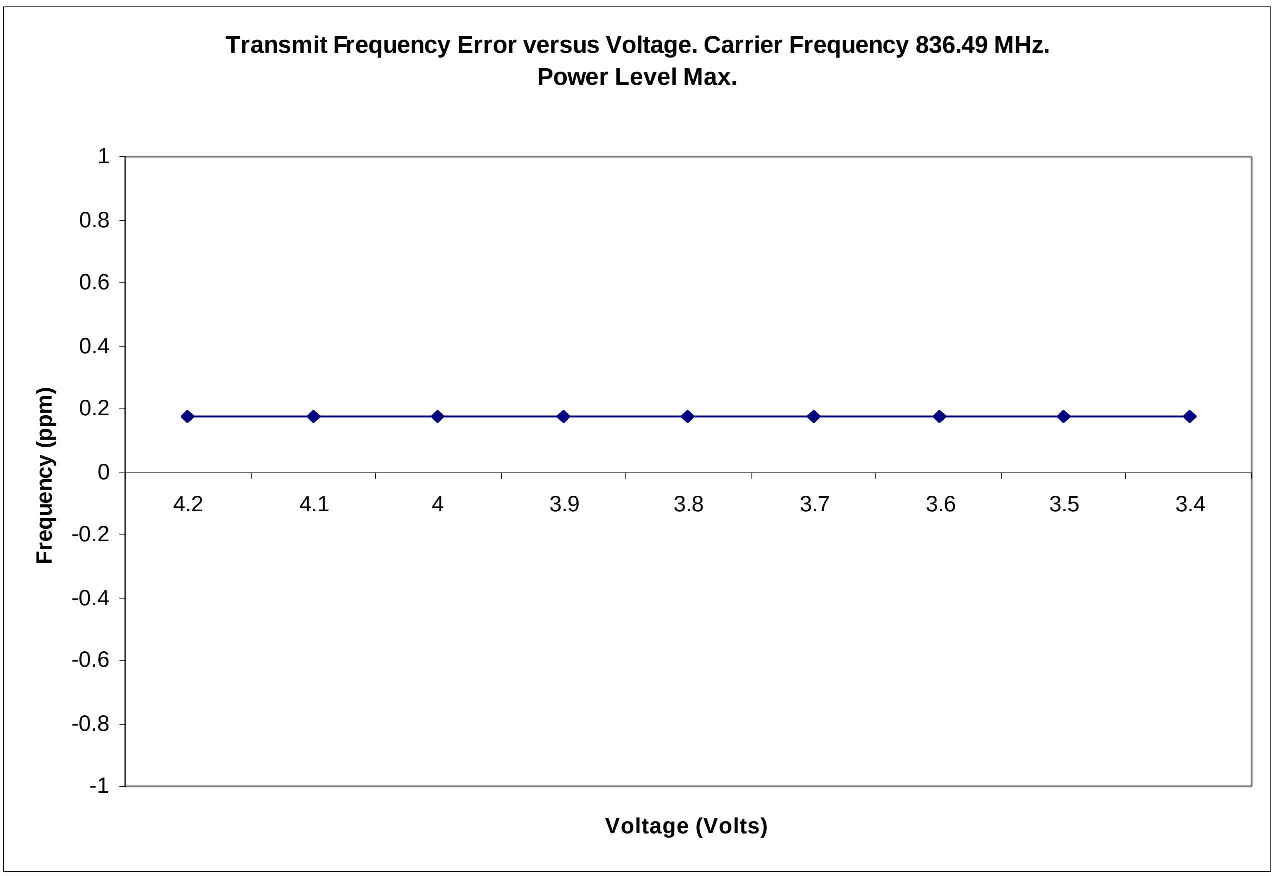


Exhibit 6F3

AMPS 800 Frequency Stability vs. Temperature

Test Case Name	Channel	Temp.	Volt.	Freq. Error (ppm)
AMPS 800 Frequency Stability	Mid Band	-30	3.8	0.174969217
AMPS 800 Frequency Stability	Mid Band	-20	3.8	0.201688006
AMPS 800 Frequency Stability	Mid Band	-10	3.8	0.179368552
AMPS 800 Frequency Stability	Mid Band	0	3.8	0.2185322
AMPS 800 Frequency Stability	Mid Band	10	3.8	0.169075542
AMPS 800 Frequency Stability	Mid Band	20	3.8	0.136104436
AMPS 800 Frequency Stability	Mid Band	30	3.8	0.197491901
AMPS 800 Frequency Stability	Mid Band	40	3.8	0.151860751
AMPS 800 Frequency Stability	Mid Band	50	3.8	0.165644538
AMPS 800 Frequency Stability	Mid Band	60	3.8	0.077849108

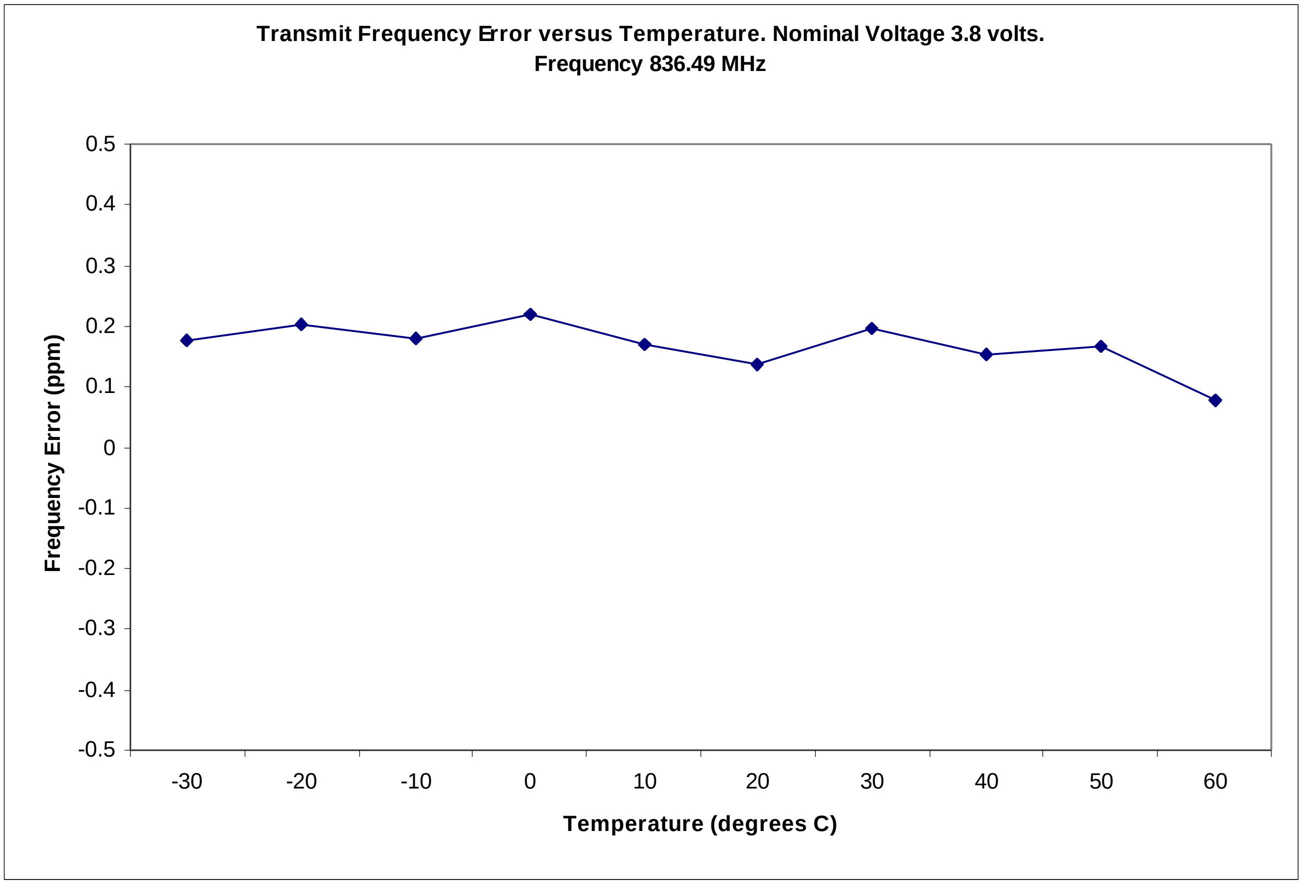


Exhibit 6G1

800 MHz CDMA RF POWER OUTPUT

Para. 2.1033 (c) 6,7, 2.1046 and 22.913 (a)

The RF power measured at the output terminal (antenna connector) is plotted against supply voltage and temperature variations.

Exhibit	Voltage	Temperature	Frequency	Power Level
6G2	3.8	Varied	Mid Band	Max
6G3	Varied	+25 C	Mid Band	Max

The unit is set up per TIA/EIA IS-98C Sect. 4.4.5. The measurements are made by using Hewlett Packard E8285A CDMA Mobile Station Test Set. The following equipment are also used:

HP EPM-441A Power Meter (S/N: US37480855)
HP 66309B Dual Output Mobile Comm. DC Source (S/N: US39050133)
ESPEC Temperature Chamber S/N: (91004533)

EFFECTIVE RADIATED POWER

The following is a description of the substitution method used in order to obtain accurate EDRP readings at the carrier fundamental frequency:

The unit under test is placed 3 m away from the measurement antenna in vertical position. The measurements are made by using calibrated antennas and equipment with known cable losses.
A maximized measurement is made by raising and lowering the measurement antenna and rotating the EUT 360 degrees. Horizontal and vertical polarization data is recorded as reference.
A generator, an amplifier and a half-wave dipole antenna are then substituted for the EUT.
Data obtained with known power levels into the substitution antenna are then compared to the reference reading. The EDRP of the product is calculated.

Test Result

Mode	f (MHz)	EDRP (dBm/mW)
CDMA	824.70	25.1/323.6
	836.52	23.5/223.9
	848.31	23.8/239.9

Exhibit 6G2

CDMA 800 RF Output Power vs. Temperature

Test Case Name	Power (dBm)	Frequency	Voltage	Temp. C
CDMA800 TX Max Output Power	23.01	Mid Band	3.8	-30
CDMA800 TX Max Output Power	23.22	Mid Band	3.8	-20
CDMA800 TX Max Output Power	23.24	Mid Band	3.8	-10
CDMA800 TX Max Output Power	23.31	Mid Band	3.8	0
CDMA800 TX Max Output Power	23.32	Mid Band	3.8	10
CDMA800 TX Max Output Power	23.32	Mid Band	3.8	20
CDMA800 TX Max Output Power	23.37	Mid Band	3.8	30
CDMA800 TX Max Output Power	23.25	Mid Band	3.8	40
CDMA800 TX Max Output Power	23.26	Mid Band	3.8	50
CDMA800 TX Max Output Power	23.31	Mid Band	3.8	60

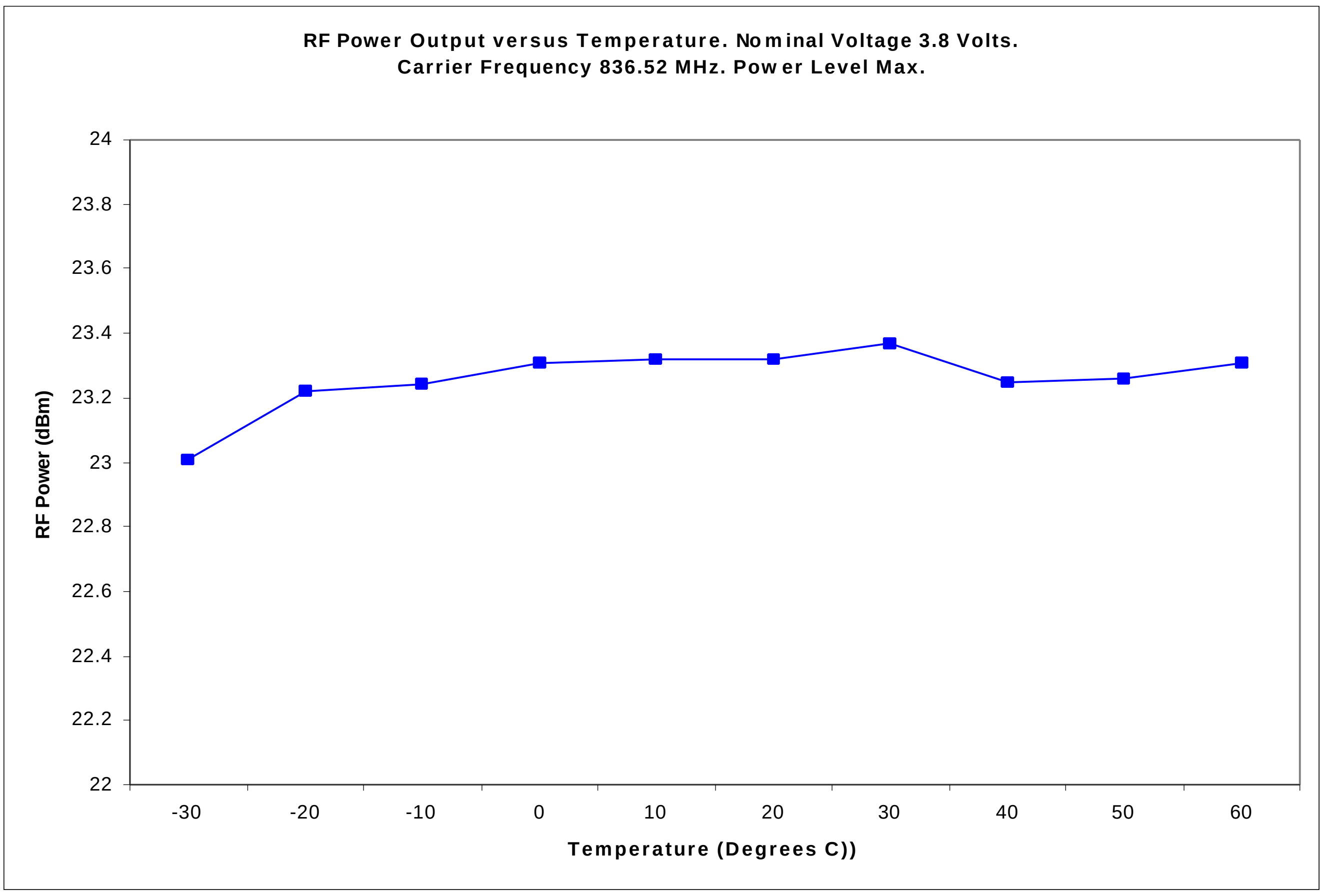


Exhibit 6G3

CDMA 800 RF Output Power vs. Voltage

Test Case Name	Channel	Voltage	Temp. C	Power (dBm)
CDMA800 TX Max RF Output Power	Mid Band	3.4	25	23.54
CDMA800 TX Max RF Output Power	Mid Band	3.5	25	23.69
CDMA800 TX Max RF Output Power	Mid Band	3.6	25	23.62
CDMA800 TX Max RF Output Power	Mid Band	3.7	25	23.65
CDMA800 TX Max RF Output Power	Mid Band	3.8	25	23.69
CDMA800 TX Max RF Output Power	Mid Band	3.9	25	23.71
CDMA800 TX Max RF Output Power	Mid Band	4	25	23.72
CDMA800 TX Max RF Output Power	Mid Band	4.1	25	23.74
CDMA800 TX Max RF Output Power	Mid Band	4.2	25	23.69

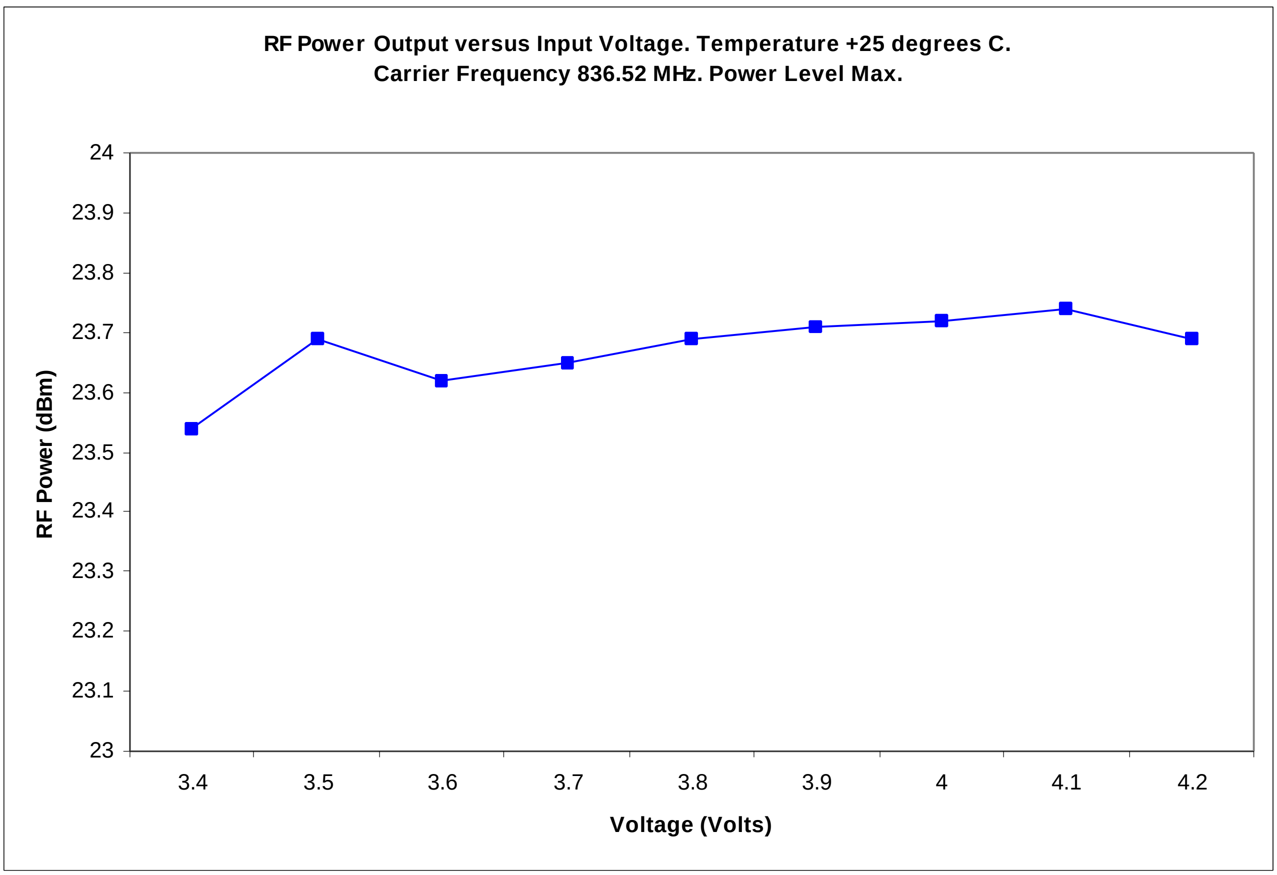


Exhibit 6H1

800 MHz CDMA MODULATION CHARACTERISTICS

Para. 2.1047

Description

For full description of modulation characteristics please refer to TIA/EIA IS-95B Section 6.1.3. (summary information is included at the end of this exhibit).

Requirements

The transceiver shall be capable of generating O-QPSK signal as described in Section 6.1.3.1 of TIA/EIA IS-95B. The modulation accuracy requirement is specified in TIA/EIA IS-98C Section 4.3.2. under the heading of Waveform Quality and Frequency Accuracy. The waveform quality is measured by setting limits on the difference between the actual transmitted signal waveform and the ideal signal waveform that is derived mathematically from the specified modulation. The specified requirement Rho (ρ) and its measurement method is fully described in TIA/EIA IS-98C Section 6.4.2.1.

Note:

Frequency accuracy shall be tested (and meet requirements) prior to the measurement of modulation characteristics.

The test is performed per TIA/EIA IS-98C Section 4.3.2 by using Hewlett Packard E8285A CDMA Mobile Station Test Set.

Test Result

Test Case Name	Rho (r)	Limit	Frequency	Volts	Temp.
CDMA800 TX Waveform Quality	0.993	0.944 to1.000	Mid Band	3.8	25

Summary Information from TIA/EIA IS-95B

6.1.3 Modulation Characteristics

6.1.3.1 Reverse CDMA Channel Signals

The Reverse CDMA Channel is composed of Access Channels and Reverse Traffic Channels. A Reverse Traffic Channel is further subdivided into a single Fundamental Code Channel and zero through seven Supplemental Code Channels. These channels shall share the same CDMA frequency assignment using direct-sequence CDMA techniques. Figure 6.1.3.1-1 shows an example of all of the signals received by a base station on the Reverse CDMA Channel. Each Code Channel of a Reverse Traffic Channel is identified by a distinct user long code sequence; each Access Channel is identified by a distinct Access Channel long code sequence. Multiple Reverse CDMA Channels may be used by a base station in a frequency division multiplexed manner.
The Reverse CDMA Channel has the overall structure shown in Figures 6.1.3.1-2 through 6.1.3.1-7. Data transmitted on the Reverse CDMA Channel is grouped into 20 ms frames. All data transmitted on the Reverse CDMA Channel is convolutionally encoded, block interleaved, modulated by the 64-ary orthogonal modulation, and direct-sequence spread prior to transmission.

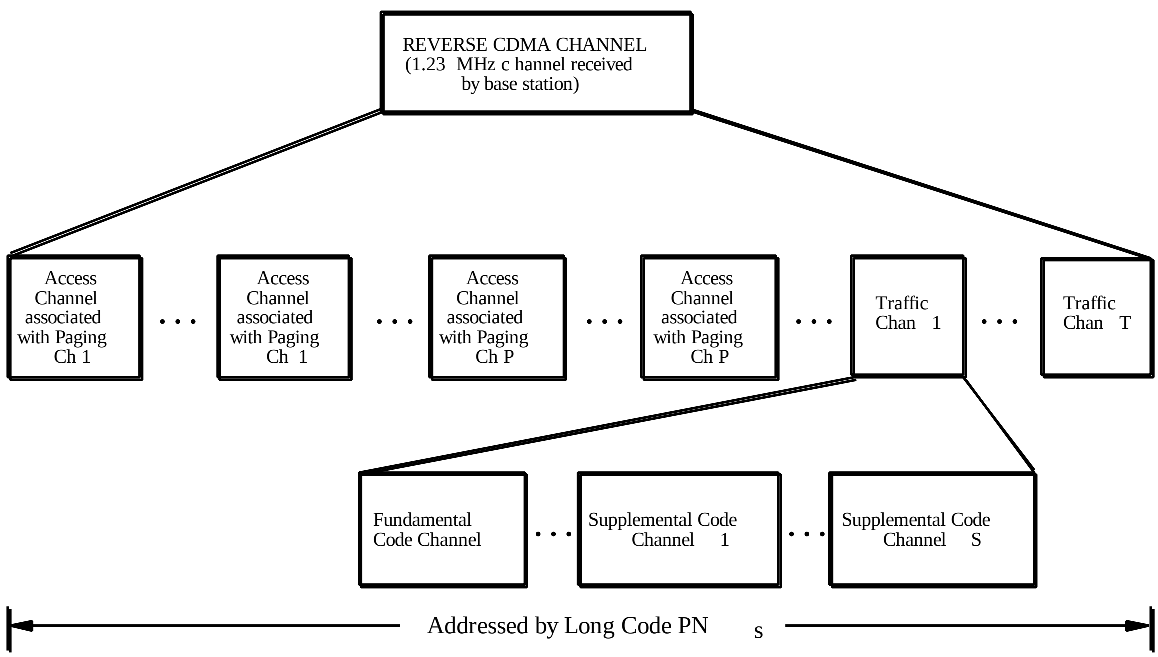


Figure 6.1.3.1-1. Example of Logical Reverse CDMA Channels Received at a Base Station

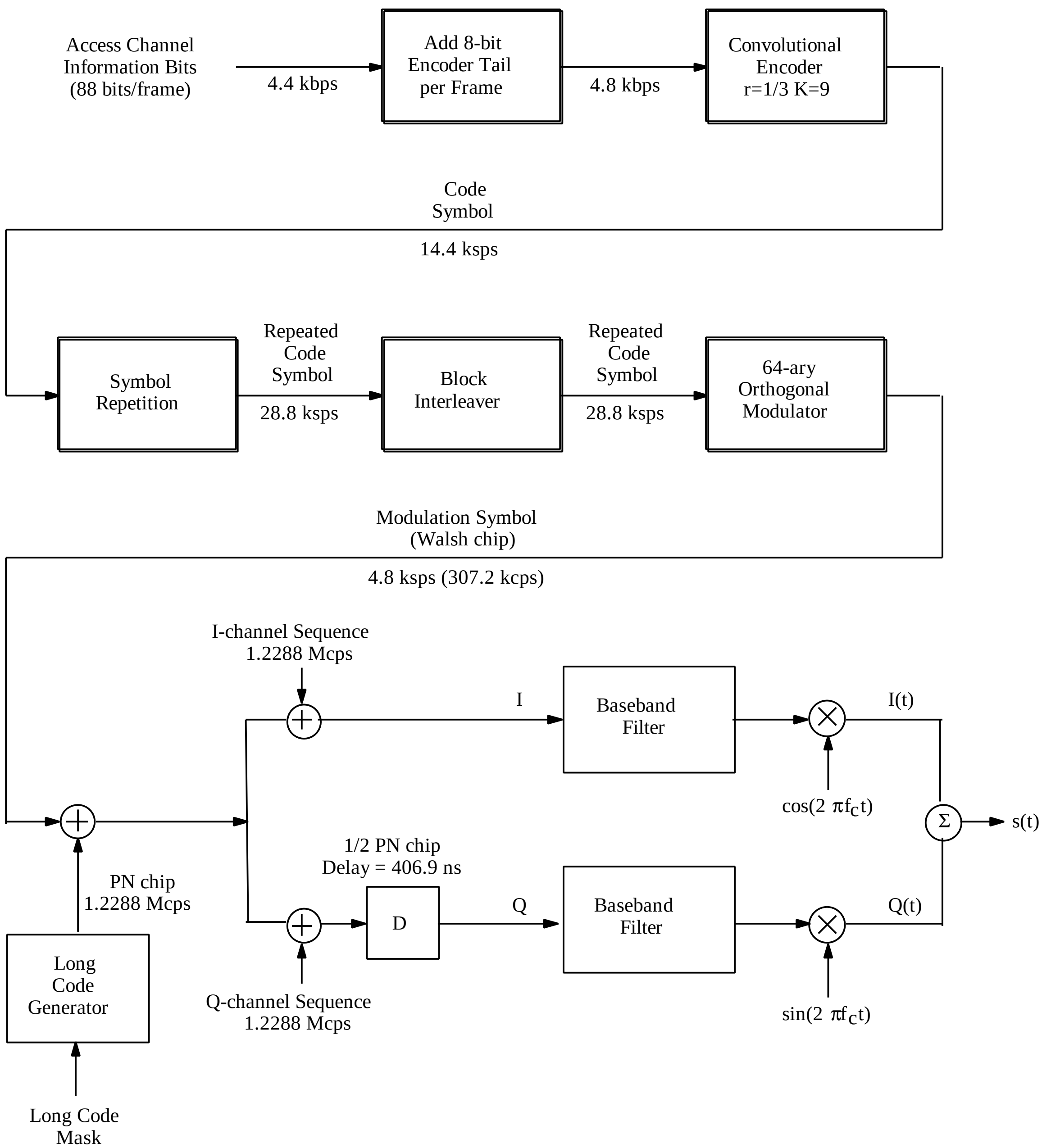


Figure 6.1.3.1-2. Reverse CDMA Channel Structure for the Access Channel

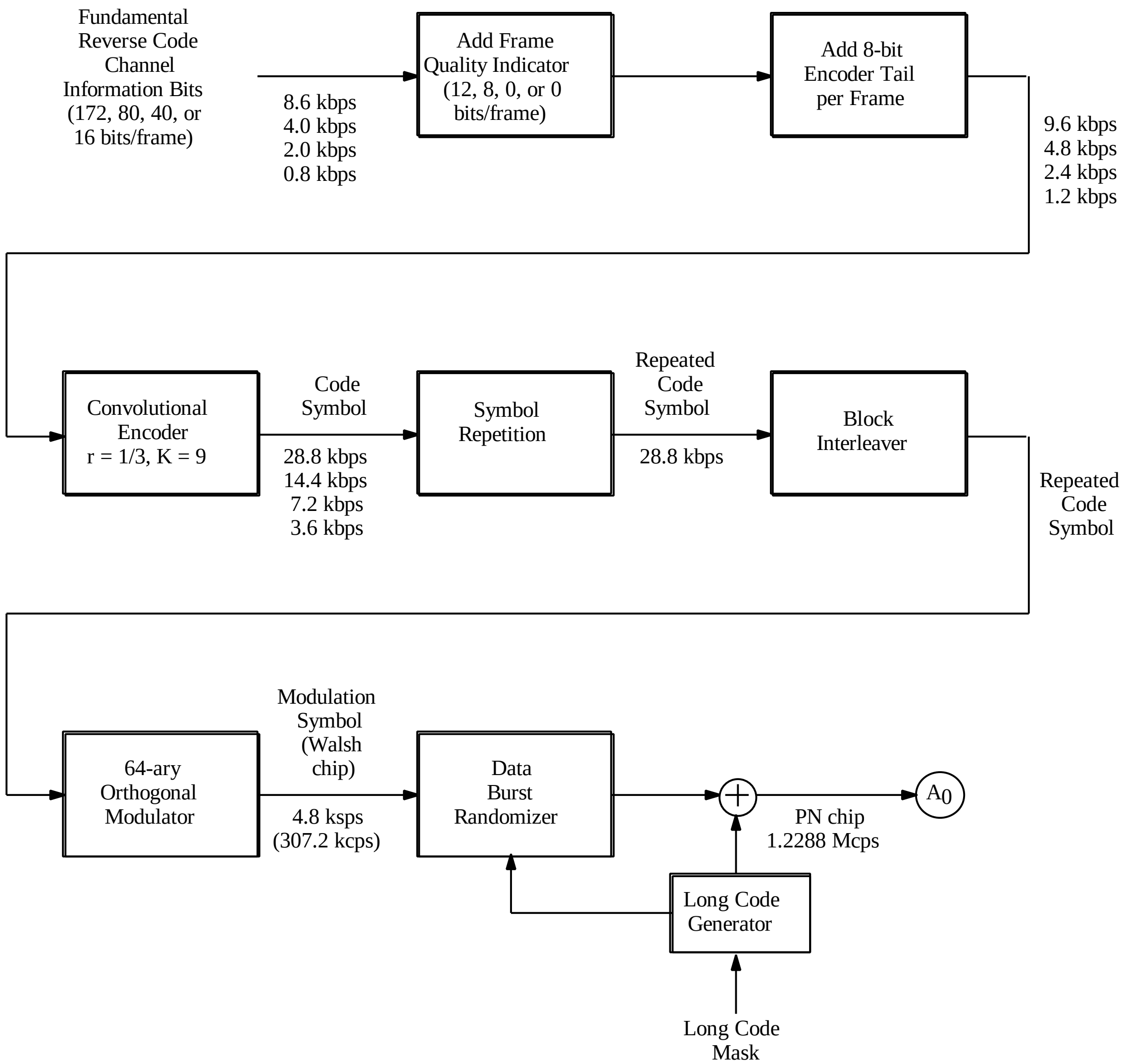


Figure 6.1.3.1-3. Reverse CDMA Channel Structure for Fundamental Code Channels with Rate Set 1

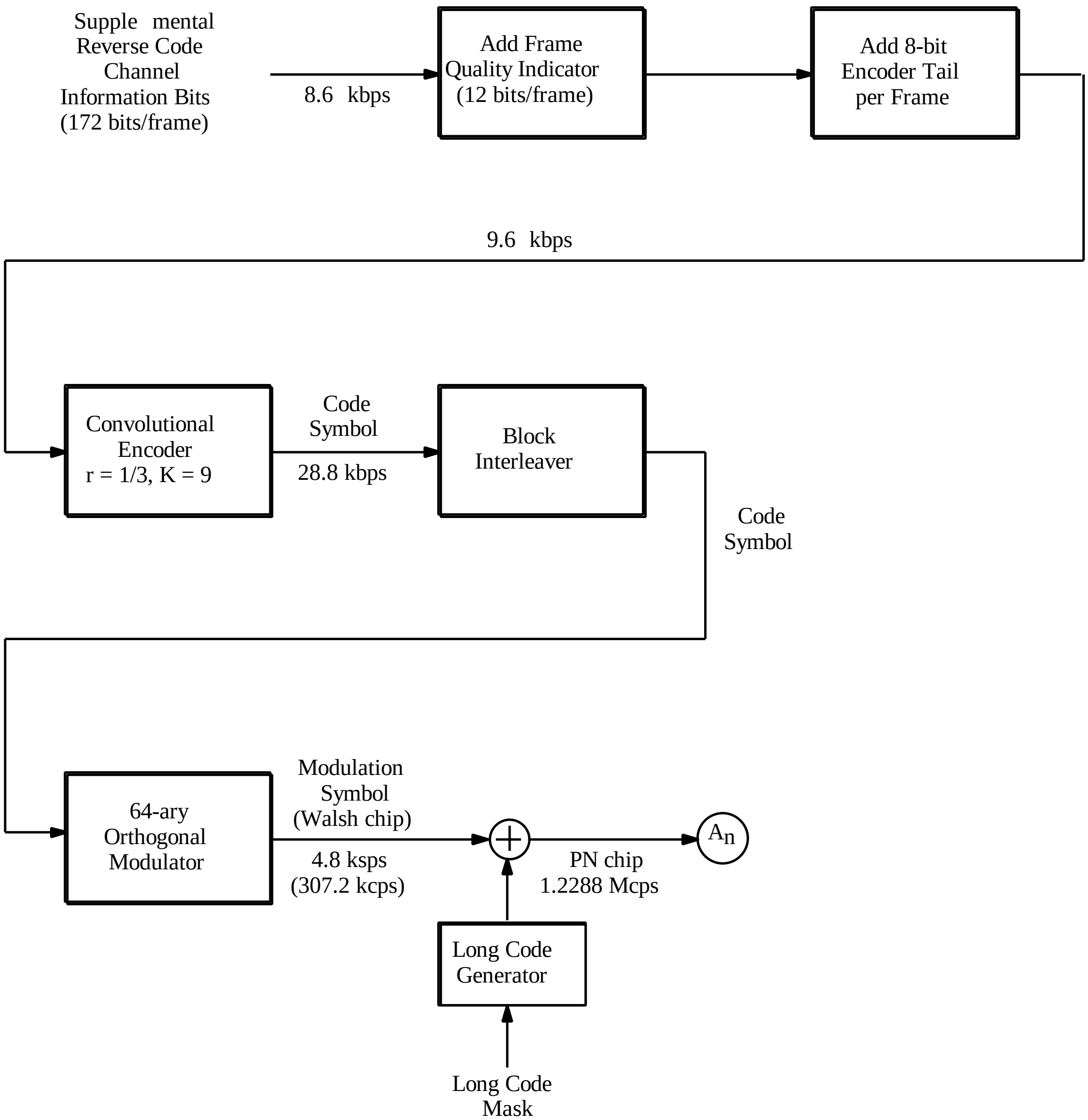


Figure 6.1.3.1-5. Reverse CDMA Channel Structure for Supplemental Code Channels with Rate Set 1

6.1.3.1.6 Orthogonal Modulation

Modulation for the Reverse CDMA Channel shall be 64-ary orthogonal modulation. One of 64 possible modulation symbols is transmitted for each six repeated code symbols. The modulation symbol shall be one of 64 mutually orthogonal waveforms generated using Walsh functions. These modulation symbols are given in Table 6.1.3.1.6-1 and are numbered 0 through 63. The modulation symbols shall be selected according to the following formula:

$$\text{Modulation symbol index} = c_0 + 2c_1 + 4c_2 + 8c_3 + 16c_4 + 32c_5,$$

where c_5 shall represent the last (or most recent) and c_0 the first (or oldest) binary valued ('0' and '1') repeated code symbol of each group of six repeated code symbols that form a modulation symbol index.

The 64 by 64 matrix can be generated by means of the following recursive procedure:

$$\mathbf{H}_1 = 0, \qquad \mathbf{H}_2 = \begin{matrix} 0 & 0 \\ 0 & 1 \end{matrix},$$

$$\mathbf{H}_4 = \begin{matrix} 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \\ 0 & 1 & 1 & 0 \end{matrix}, \qquad \mathbf{H}_{2N} = \begin{matrix} \mathbf{H}_N & \mathbf{H}_N \\ \mathbf{H}_N & \overline{\mathbf{H}}_N \end{matrix},$$

where N is a power of 2 and $\overline{\mathbf{H}}_N$ denotes the binary complement of $\mathbf{H}_N$.

The period of time required to transmit a single modulation symbol shall be equal to 1/4800 second (208.333... µs). The period of time associated with one-sixty-fourth of the modulation symbol is referred to as a Walsh chip and shall be equal to 1/307200 second (3.255... µs).

Within a modulation symbol, Walsh chips shall be transmitted in the order of 0, 1, 2, ..., 63.

6.1.3.1.9 Quadrature Spreading

Following the direct sequence spreading, the Access Channel and the Fundamental and Supplemental Code Channels of the Reverse Traffic Channel are spread in quadrature as shown in Figures 6.1.3.1-2, 6.1.2.1-3, and 6.1.3.1-4. The sequences used for this spreading shall be the zero-offset I and Q pilot PN sequences used on the Forward CDMA Channel. These sequences are periodic with period 2^{15} chips.

The mobile station shall align the I and Q pilot PN sequences such that the first chip on every even second mark as referenced to the transmit time reference is the '1' after the 15 consecutive '0's.

The pilot PN sequences repeat every 26.666... ms (= 2^{15}/1228800 seconds). There are exactly 75 repetitions in every 2 seconds.

The data spread by the Q pilot PN sequence shall be delayed by half a PN chip time (406.901 ns) with respect to the data spread by the I pilot PN sequence.
After baseband filtering (see 6.1.3.1.10), the binary data (‘0’s and ‘1’s), I and Q shown in Figures 6.1.3.1-2, 6.1.3.1-3, and 6.1.3.1-4, shall be mapped into phase according to Table 6.1.3.1.9-1. The resulting signal constellation and phase transition are shown in Figure 6.1.3.1.9-1.

Table 6.1.3.1.9-1. Reverse CDMA Channel I and Q Mapping

I	Q	Phase
0	0	p / 4
1	0	3p / 4
1	1	-3p / 4
0	1	-p / 4

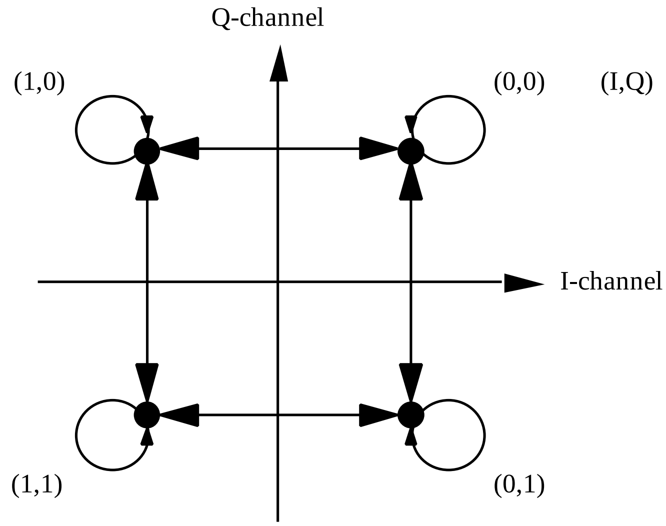


Figure 6.1.3.1.9-1. Reverse CDMA Channel Signal Constellation and Phase Transition

6.1.3.1.10 Baseband Filtering

Following the spreading operation, the I and Q impulses are applied to the inputs of the I and Q baseband filters as shown in Figures 6.1.3.1-2, 6.1.3.1-3, and 6.1.3.1-4. The baseband filters shall have a frequency response S(f) that satisfies the limits given in Figure 6.1.3.1.10-1.

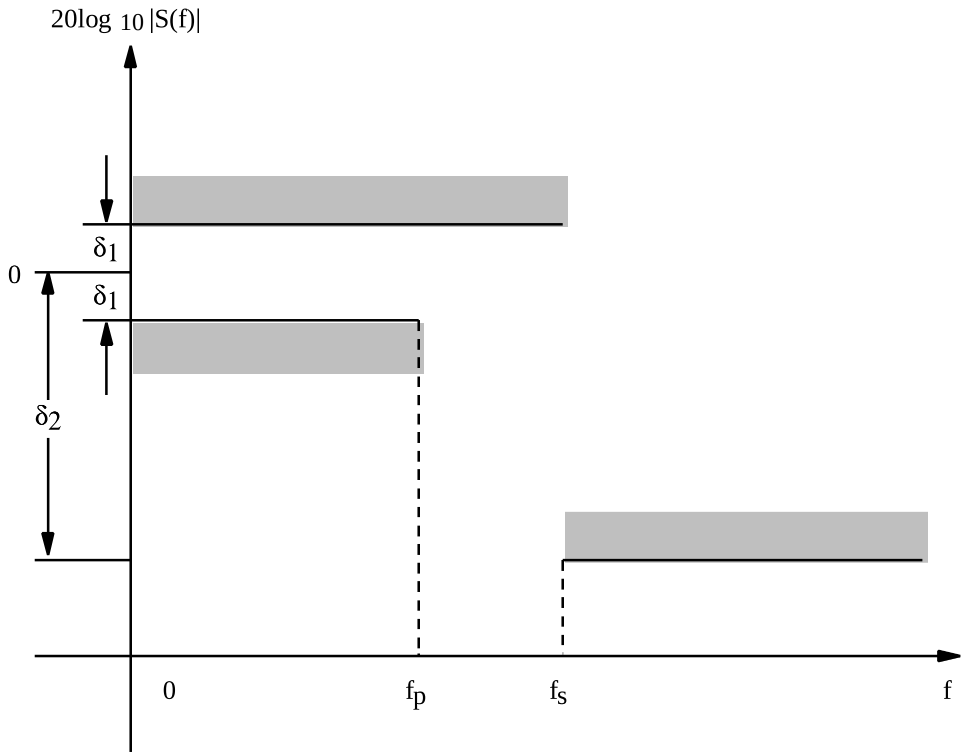


Figure 6.1.3.1.10-1. Baseband Filters Frequency Response Limits

Let s(t) be the impulse response of the baseband filter. Then s(t) should satisfy the following equation:

$$\text{Mean Squared Error} = \sum_{k=0}^{8} [\alpha s(kT_S - \tau) - h(k)]^2 = 0.03,$$

where the constants ? and ? are used to minimize the mean squared error. The constant T_S is equal to 203.451... ns, which equals one quarter of the duration of a PN chip.

Exhibit 6I1

800 MHz CDMA OCCUPIED BANDWIDTH

Para. 2.1049 and 22.917 (h).

The exhibit presented shows the occupied bandwidth and adjacent channel power graphs for CDMA modulation.

Exhibit	Description	Frequency	Power Level
6I2	Occupied Bandwidth	Mid Band	Max
6I2b	Occupied Bandwidth (1XRTT)	Mid Band	Max
6I3	Adjacent Channel Power	Mid / Low / High Bands	Max
6I3b	Adjacent Channel Power (1XRTT)	Mid / Low / High Bands	Max

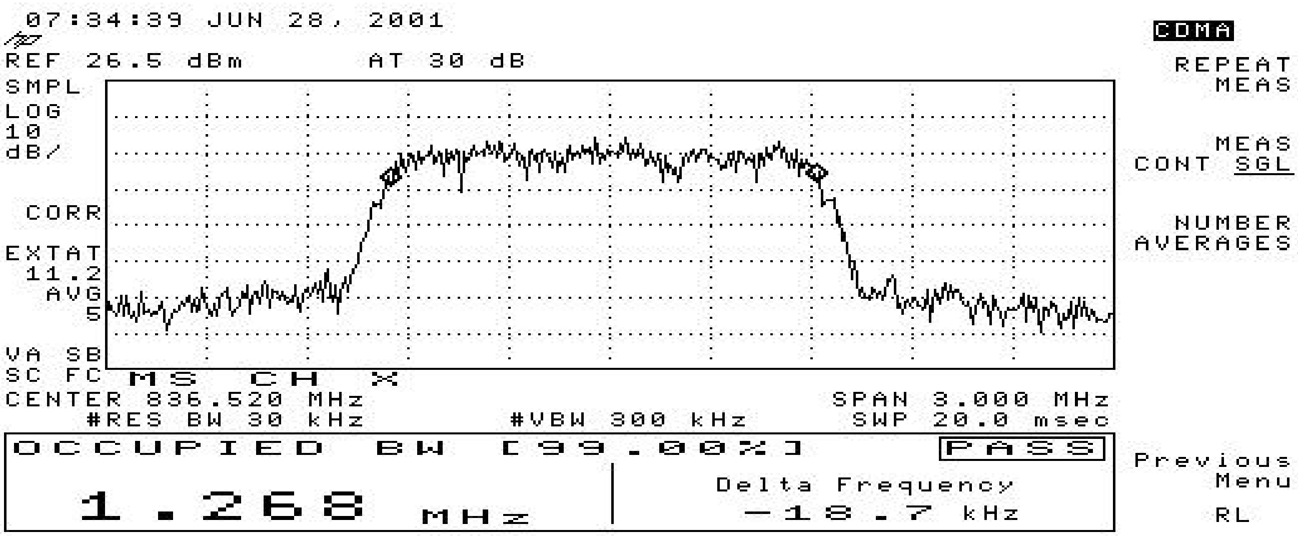
The unit under test is set up per TIA/EIA IS-98C Section 4.4.5. To obtain the occupied bandwidth plot, waveform's 99% total integrated power bandwidth is measured by using Hewlett Packard HP8593E Spectrum Analyzer e/w HP85725C CDMA Personality. Adjacent Channel Power is measured with the same equipment. The following equipment are also used:

Adjacent Channel Power (ACPR) is measured by using Hewlett Packard HP8593E Spectrum Analyzer e/w HP85725C CDMA Personality. This routine uses Integration Bandwidth Method (IBW) which performs a frequency sweep through Integration bandwidth of 1.4 MHz using a resolution bandwidth much narrower than the channel bandwidth (30 kHz). The total carrier power is automatically measured and the adjacent channel power ratio is computed as the ratio of total carrier power vs power measured at offset frequencies.

HP EPM-441A Power Meter (S/N: US37480855)
HP 66309B Dual Output Mobile Comm. DC Source (S/N: US39050133)

Exhibit 6I2

Occupied Bandwidth



Occupied Bandwidth (1XRTT)

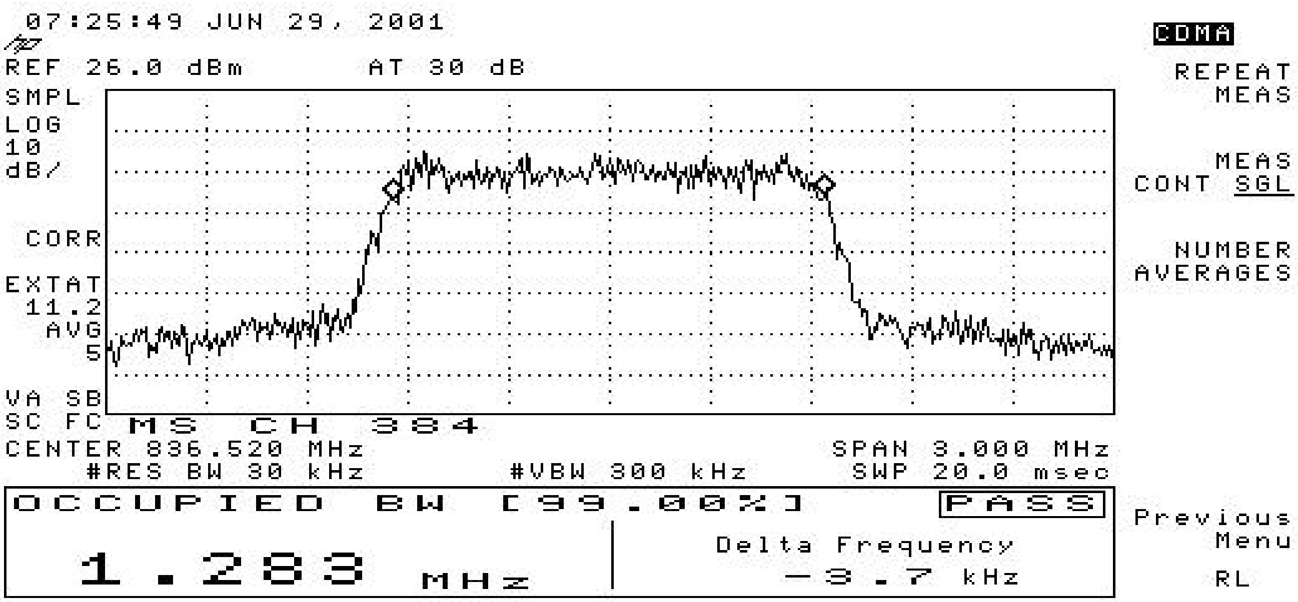
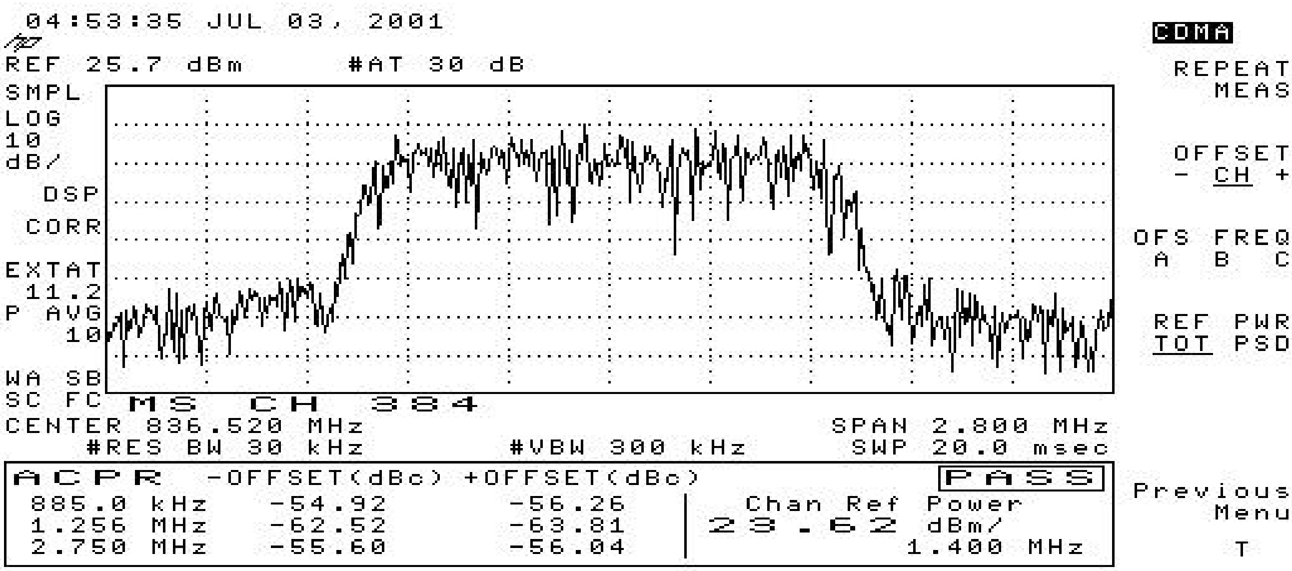


Exhibit 6I3

acpwr01-channel 384



acpwr01-channel 384 (1XRTT)

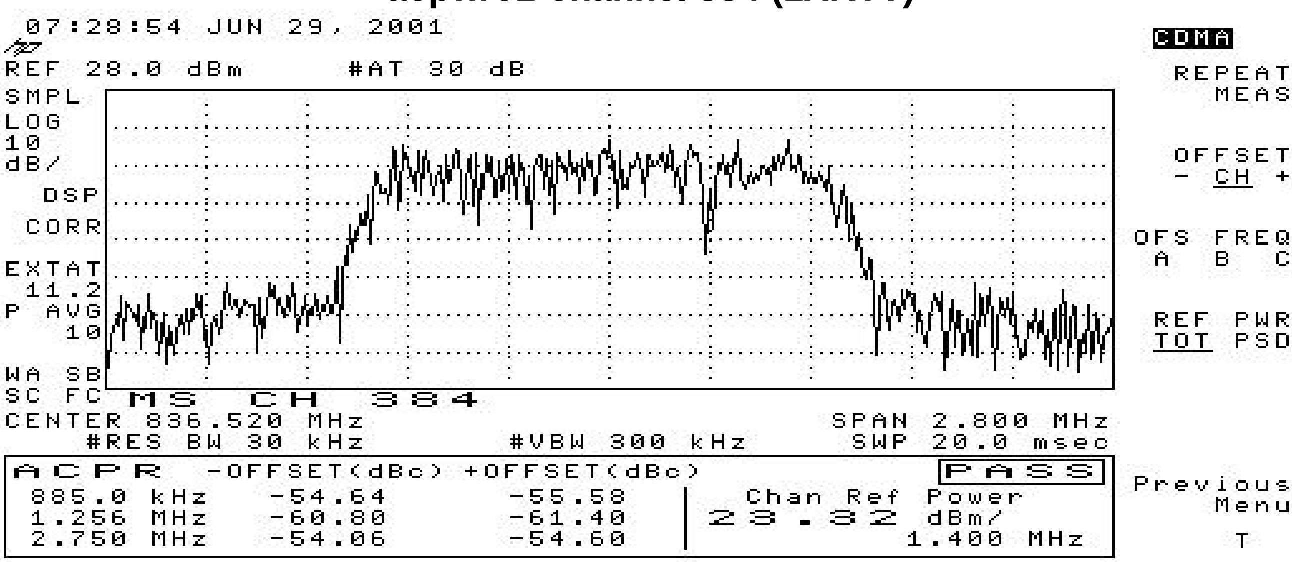
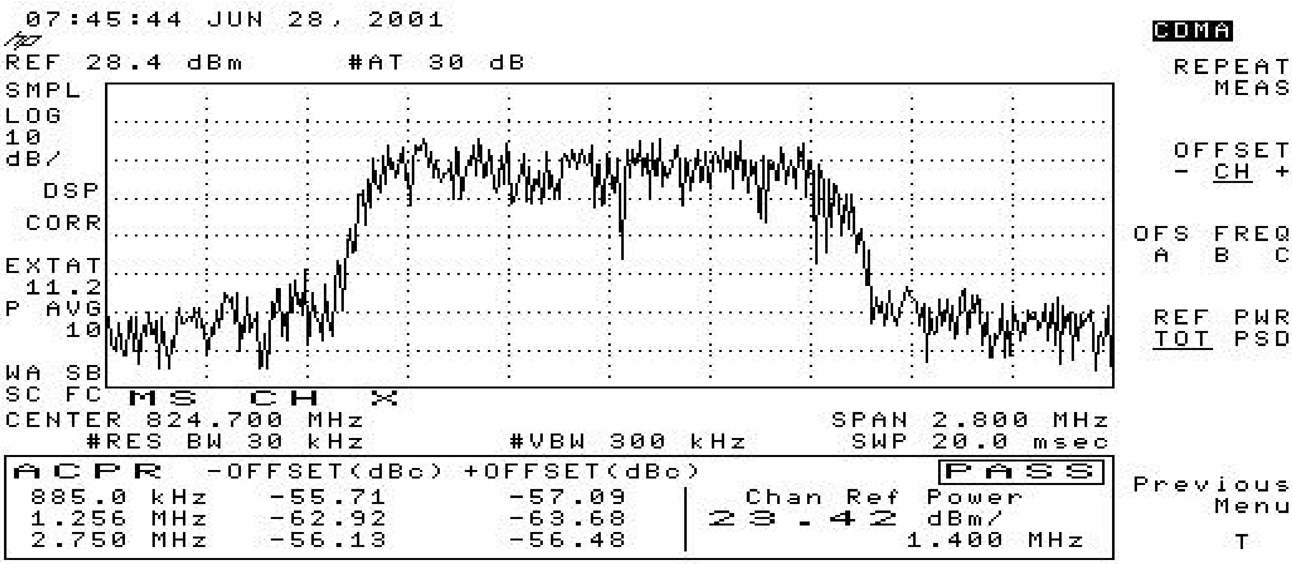


Exhibit 6I3 (continued)

acpwr02– channel 1013



acpwr02– channel 1013 (1XRTT)

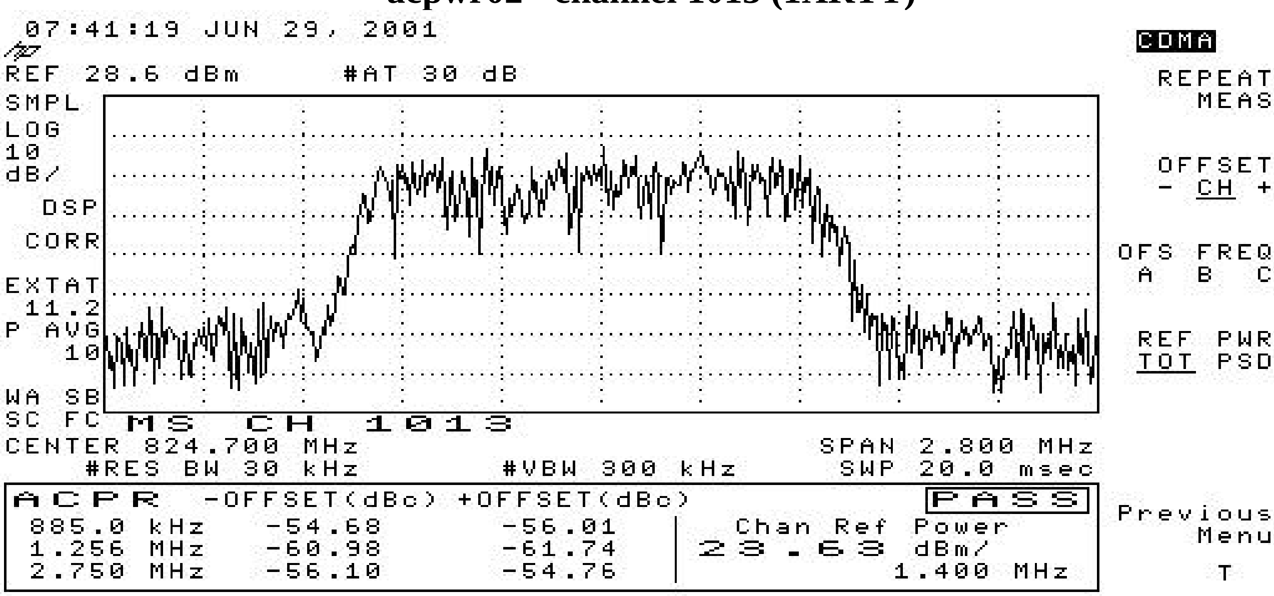
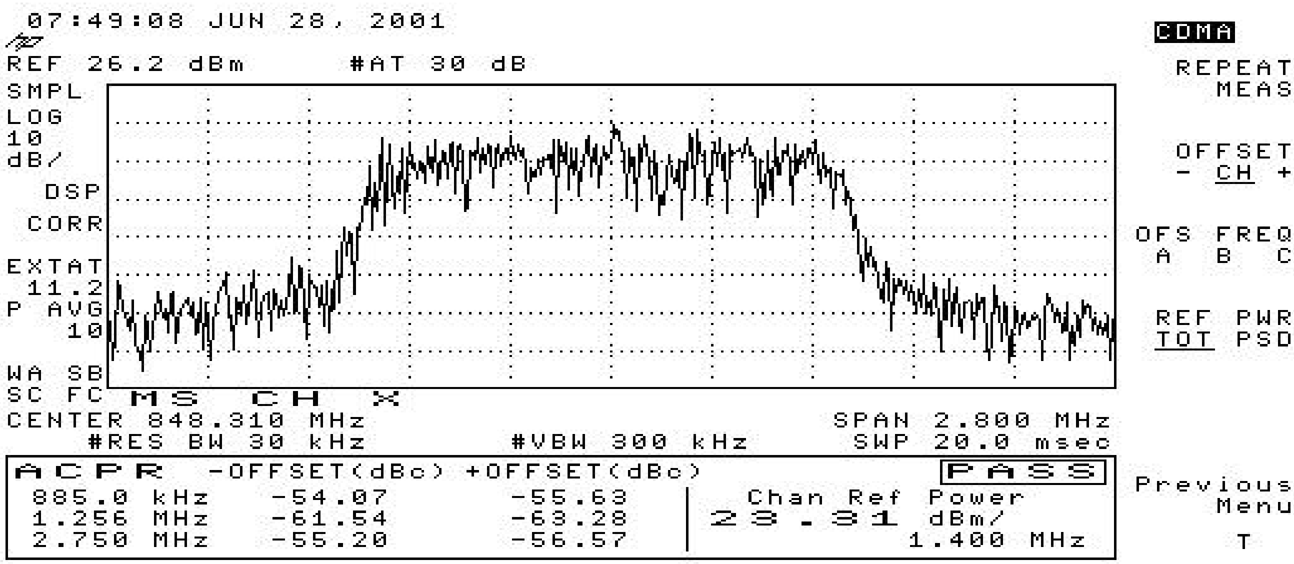


Exhibit 6I3 (continued)

acpwr03– channel 777



acpwr03– channel 777 (1XRTT)

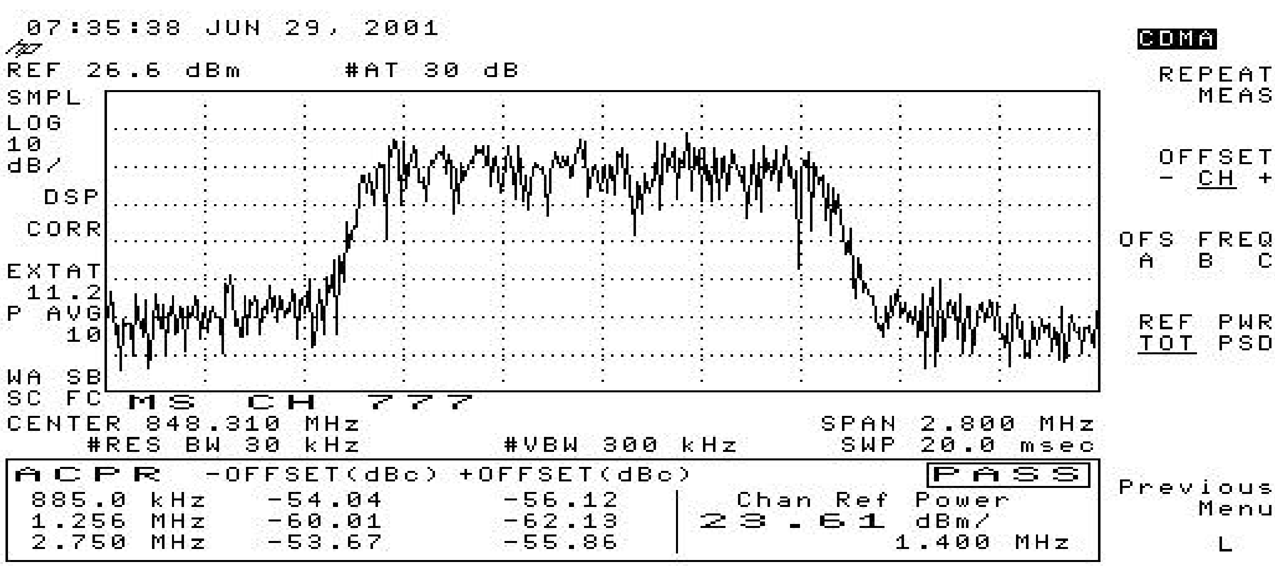


Exhibit 6J1

800 MHz CDMA SPURIOUS EMISSIONS (Conducted)

Para. 2.1051 and 22.917 (e), (h).

Spurious emissions at the antenna terminal (conducted) are measured per EIA/TIA IS-98C Section 4.5.1.

Exhibit	Frequency	Output Power Level	Description
6J2	Low Band	Max	Conducted Emissions
6J3	Low Band	Low	Conducted Emissions
6J4	Mid Band	Max	Mobile Emission in Base Freq. Range

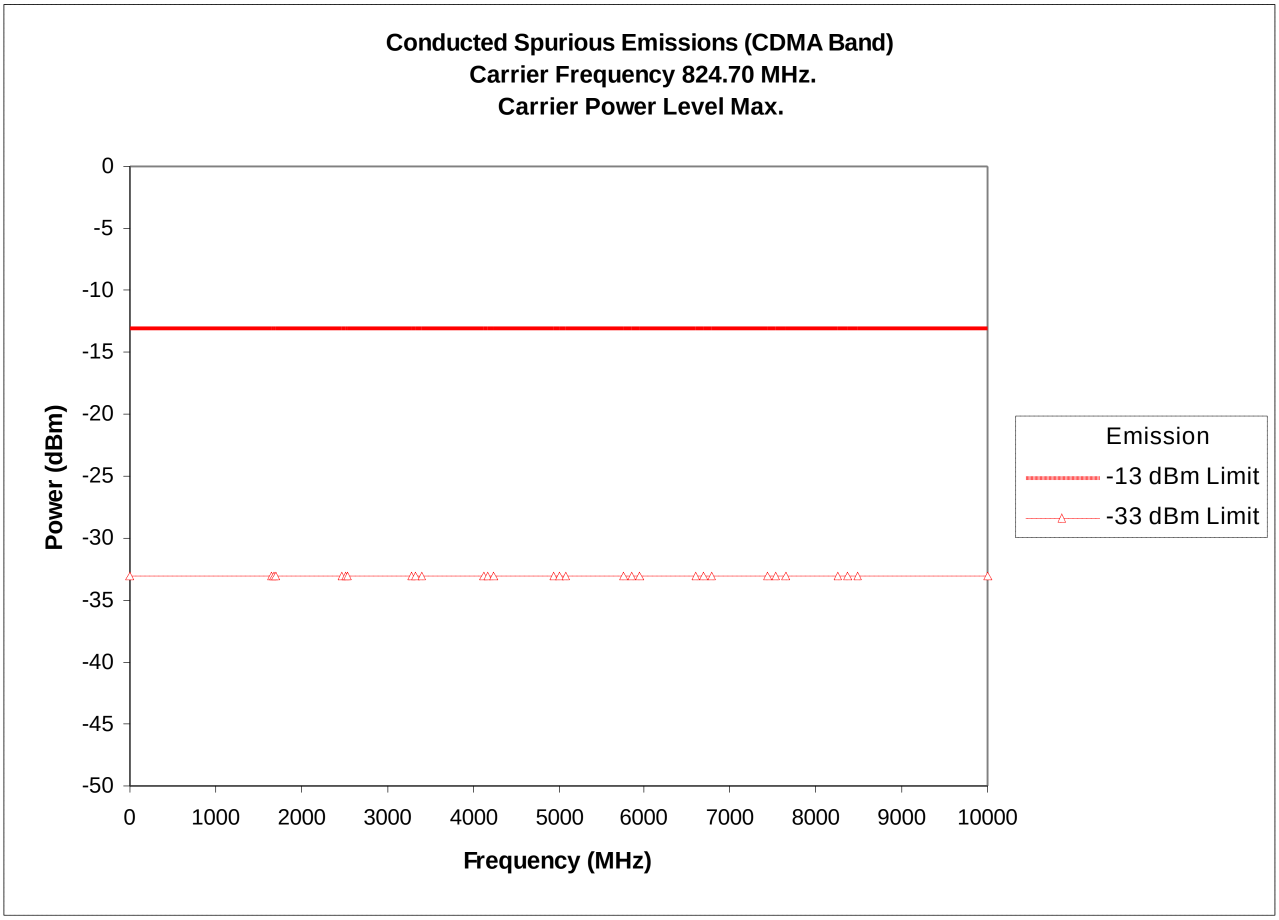
Note: The spectrum is examined through the 10^{th} harmonic of the carrier. Recorded measurements are peak values.

The measurements are made per TIA/EAI IS-98C Sect. 4.5.1 using the following equipment:

HP E7405A EMC Spectrum Analyzer 9 kHz – 26.5 GHz (S/N: US39150143)
HP EPM-441A Power Meter (S/N: US37480855)
HP 66309B Dual Output Mobile Comm. DC Source (S/N: US39050133)

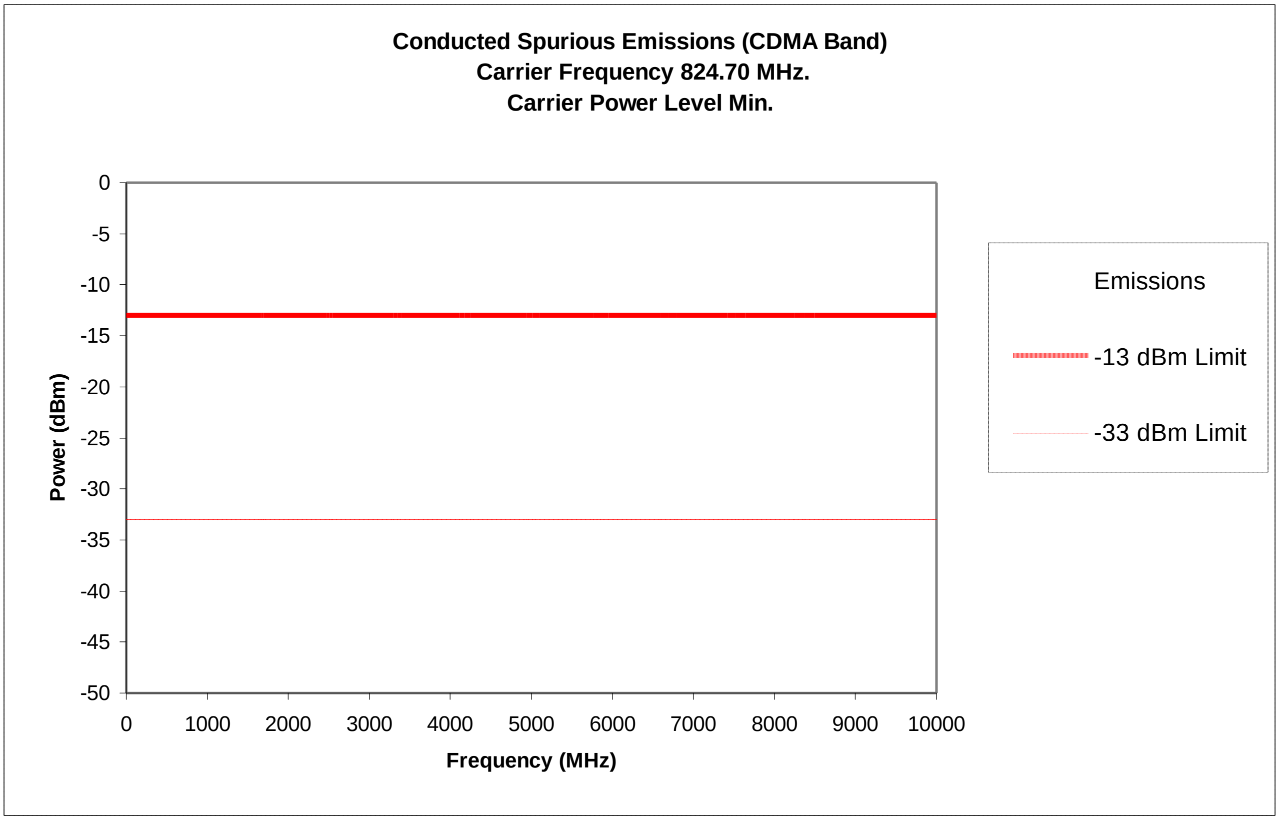
Test Result: There is no emission to report within 20 dB of the limit specified.

Exhibit 6J2



There is no emission to report within 20 dB of the limit specified.

Exhibit 6J3



There is no emission to report within 20 dB of the limit specified.

Mobile Emissions in Base Station Frequency Band.

Note: To measure the mobile emissions in base station frequency range Tekelec-Temex Model CDL 824 45 14 (869/824 MHz) duplex filter is used.

mebfr01-channel 384

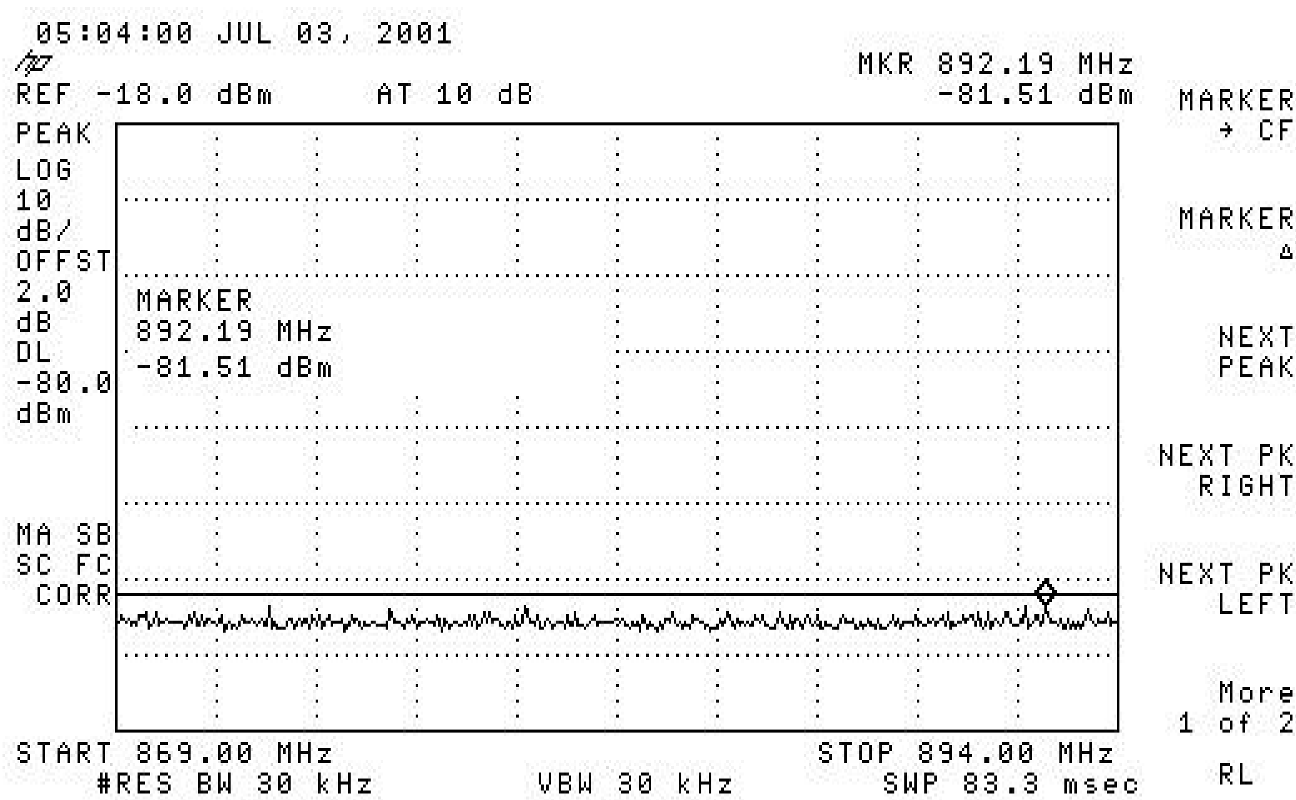


Exhibit 6K1

800 MHz CDMA SPURIOUS EMISSIONS (Radiated)

Para: 2.1053 and Part 22.917 (e)

Field strength of spurious radiation is measured at Underwriters Laboratories Inc. Research Triangle Park, NC site. The measurement method is per EIA/TIA IS-98C Section 4.5.2 and ANSI C63.4-1992. Results are shown on the following exhibits.

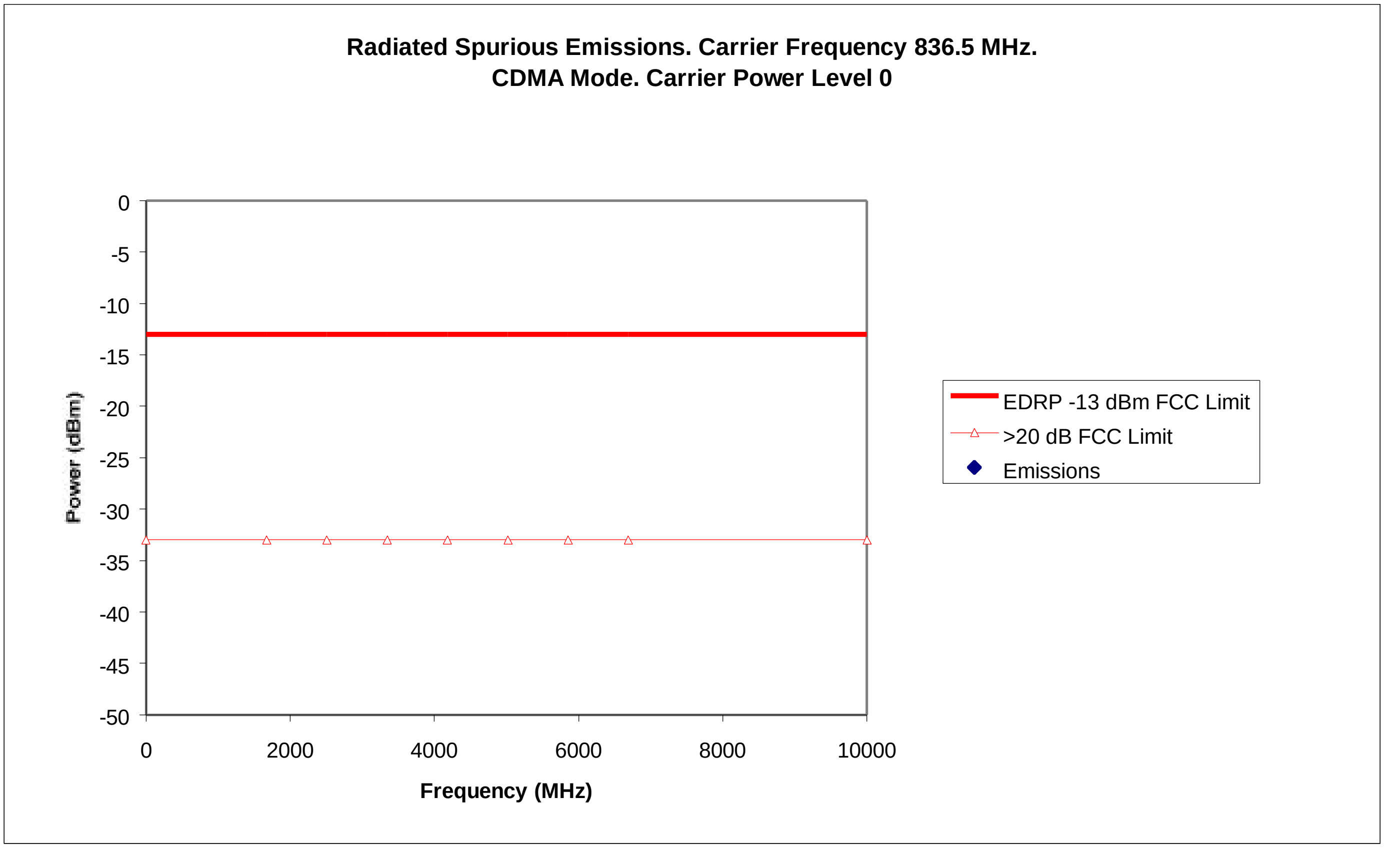
Note: The spectrum is examined through the 10th harmonic of the carrier. Recorded measurements are maximized values.

Exhibit	Frequency	Output Power Level
6K2	Mid Band	0

The measurements are made by using the 8572A detection system (S/N: SAR0001) which includes:

8566B Spectrum Analyzer 100 Hz - 2.5GHz \ 2 - 22 GHz
85650A Quasi Peak Detector
HP Amplifier 8449B Opt H02 1 - 26.5 GHz
HP Signal Generator 8657B .1 - 2060 MHz

Exhibit 6K2



There is no emission to report within 20 dB of the limit specified.

Exhibit 6L1

800 MHz CDMA FREQUENCY STABILITY

Para. 2.1055 (a)(1),(b), (d).

The data and plots shown in this exhibit represent 800MHz CDMA Frequency Stability measured per TIA/EAI IS-98C Sect. 4.1.1.

Exhibit	Voltage	Temperature
6L2	3.4 to 4.2 Volts (varied)	+25 C
6L3	3.8 Volts	Varied

Note: The manufacturer's rated voltage for the battery is 3.4 VDC to 4.2 VDC.

The measurements are made per TIA/EAI IS-98C Sect. 4.1.1 using the following equipment:

HP 66309B Dual Output Mobile Comm. DC Source (S/N: US39050133)
HP 83712B CW Signal Generator 10 MHz – 20 GHz (S/N: US37100945)
Anritzu MT 8802A Radio Communications Analyzer 300 kHz – 3 GHz (S/N: MB25017)

Exhibit 6L2

CDMA 800 Frequency vs. Voltage

Test Case	Channel	Voltage	Temp. C	Freq. Error (Hz)	Limit (Hz)
CDMA800 TX Frequency Accuracy	Mid Band	3.4	25	3.8	+/-300
CDMA800 TX Frequency Accuracy	Mid Band	3.5	25	-6.3	+/-300
CDMA800 TX Frequency Accuracy	Mid Band	3.6	25	9	+/-300
CDMA800 TX Frequency Accuracy	Mid Band	3.7	25	8.1	+/-300
CDMA800 TX Frequency Accuracy	Mid Band	3.8	25	-1.6	+/-300
CDMA800 TX Frequency Accuracy	Mid Band	3.9	25	-3.9	+/-300
CDMA800 TX Frequency Accuracy	Mid Band	4	25	-5.2	+/-300
CDMA800 TX Frequency Accuracy	Mid Band	4.1	25	0.9	+/-300
CDMA800 TX Frequency Accuracy	Mid Band	4.2	25	0.5	+/-300

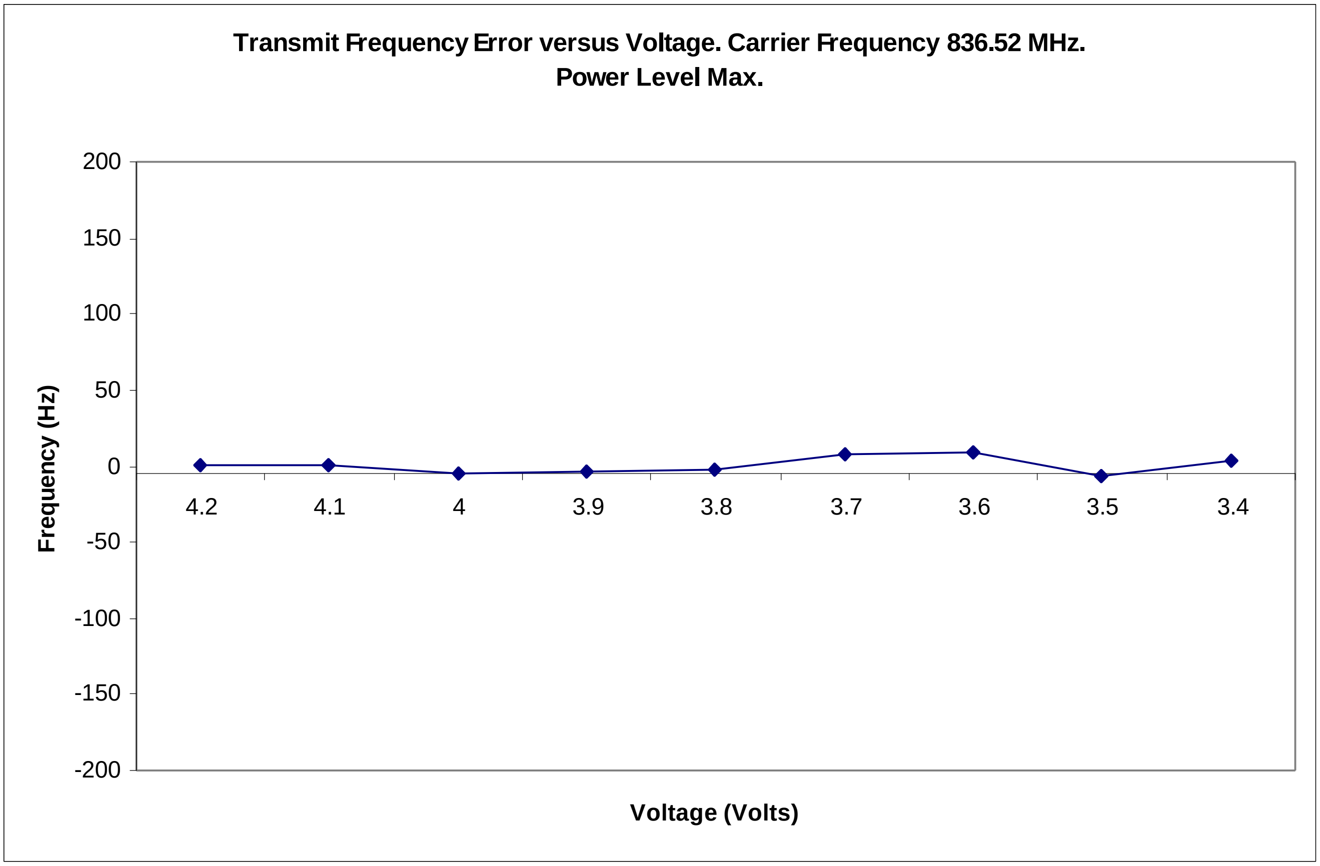


Exhibit 6L3

CDMA 800 Frequency vs. Temperature

Test Case Name	Channel	Temp.	Volt.	Freq. Error (Hz)	Limit (Hz)
CDMA800 TX Frequency Accuracy	Mid Band	-30	3.8	15.8	+/- 300
CDMA800 TX Frequency Accuracy	Mid Band	-20	3.8	3.1	+/- 300
CDMA800 TX Frequency Accuracy	Mid Band	-10	3.8	5.3	+/- 300
CDMA800 TX Frequency Accuracy	Mid Band	0	3.8	2.5	+/- 300
CDMA800 TX Frequency Accuracy	Mid Band	10	3.8	-0.5	+/- 300
CDMA800 TX Frequency Accuracy	Mid Band	20	3.8	0	+/- 300
CDMA800 TX Frequency Accuracy	Mid Band	30	3.8	-3.9	+/- 300
CDMA800 TX Frequency Accuracy	Mid Band	40	3.8	5	+/- 300
CDMA800 TX Frequency Accuracy	Mid Band	50	3.8	4.1	+/- 300
CDMA800 TX Frequency Accuracy	Mid Band	60	3.8	4	+/- 300

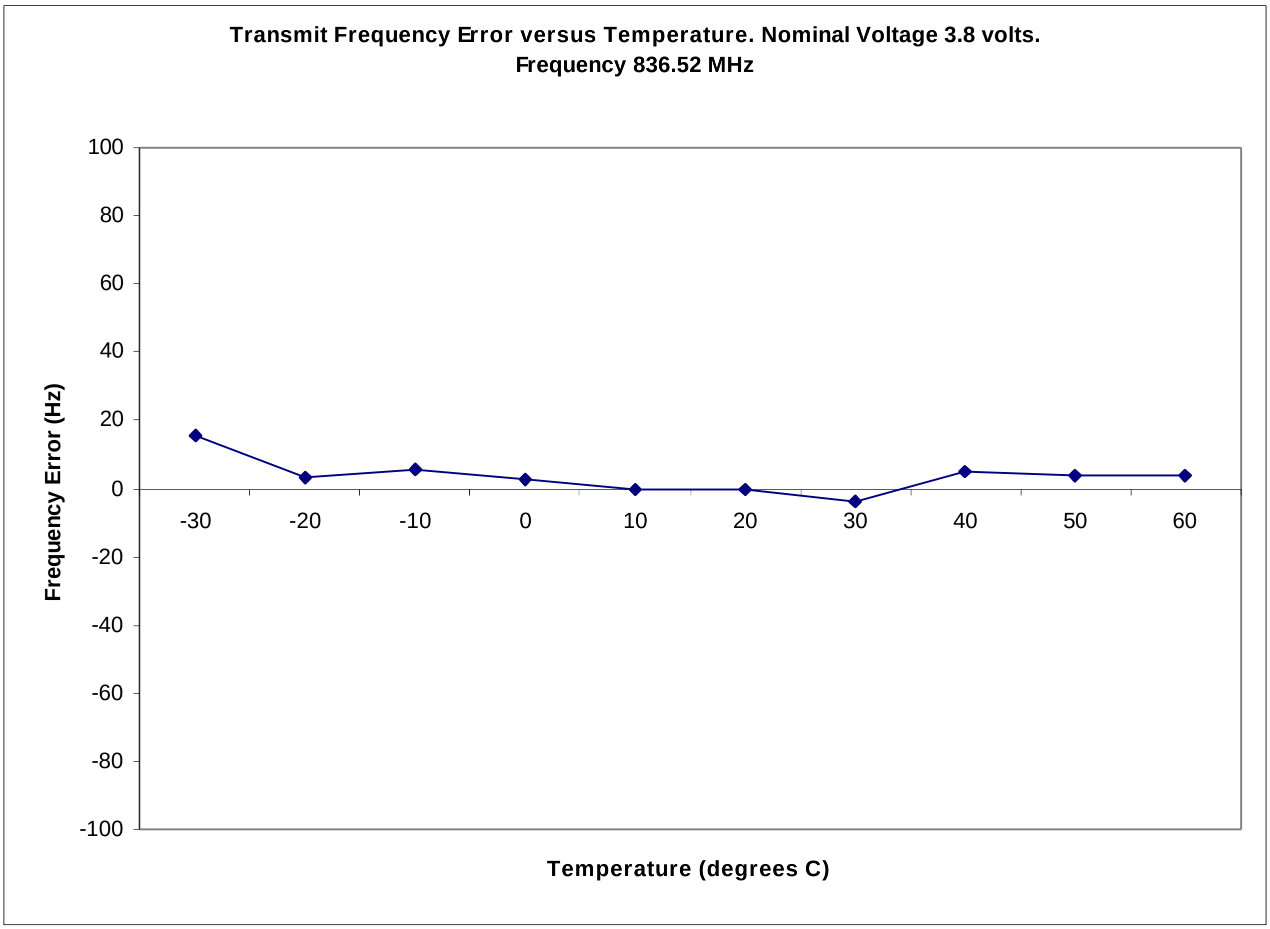


Exhibit 6M1

1900MHz CDMA RF POWER OUTPUT

Para. 2.1033 (c,6,7), 2.1046

The RF power measured at the output terminals (antenna connector) is plotted against supply voltage variation and temperature variations at the highest levels.

For Canada/DOC use:

Exhibit	Voltage (V)	Temperature	TX Freq	Power Level
6M2	Varied	+25C	Mid Band	0
6M3	3.8	Varied	Mid Band	0

The measurements were made the following equipment:

HP EPM-441A Power Meter (S/N: US37480855)
HP 66309B Dual Output Mobile Comm. DC Source (S/N: US39050133)
ESPEC Temperature Chamber S/N: (91004533)

<u>EIRP</u>

Table1: EIRP Power table

Mode	f (MHz)	Radiated (dBm/mW)
CDMA	1850.04	22.5/177.8
	1880.04	24.5/281.8
	1909.92	25.5/354.8

The following is a description of the substitution method used to obtain accurate EIRP readings at the carrier fundamental frequency:

(1) EUT measurements are made at 3 m using calibrated antennas and equipment with known cable losses.
(2) Readings were maximized by raising and lowering the antenna and rotating the EUT 360 degrees. Horizontal and vertical polarization data is recorded.
(3) A generator and dipole antenna are then substituted for the EUT. The dipole antenna is a half-wave dipole. If a dipole antenna cannot be used, then the designated antenna is referenced to a dipole antenna.
(4) Measurements are made through the dipole antenna at known power levels to determine the system calibration factors at a given frequency.
(5) At frequencies where no calibration data is taken, the value is interpolated between the closest data point above and below the transmit frequency. Calibration data is taken with a half-wave dipole antenna.

Exhibit 6M2

CDMA1900 RF Output Power vs. Voltage

Test Case	Channel	Voltage	Temp	Power (dBm)
CDMA1900 TX Maximum RF Output Power	Mid Band	3.4	25	22.71
CDMA1900 TX Maximum RF Output Power	Mid Band	3.5	25	22.69
CDMA1900 TX Maximum RF Output Power	Mid Band	3.6	25	22.73
CDMA1900 TX Maximum RF Output Power	Mid Band	3.7	25	22.74
CDMA1900 TX Maximum RF Output Power	Mid Band	3.8	25	22.68
CDMA1900 TX Maximum RF Output Power	Mid Band	3.9	25	22.73
CDMA1900 TX Maximum RF Output Power	Mid Band	4	25	22.68
CDMA1900 TX Maximum RF Output Power	Mid Band	4.1	25	22.71
CDMA1900 TX Maximum RF Output Power	Mid Band	4.2	25	22.69

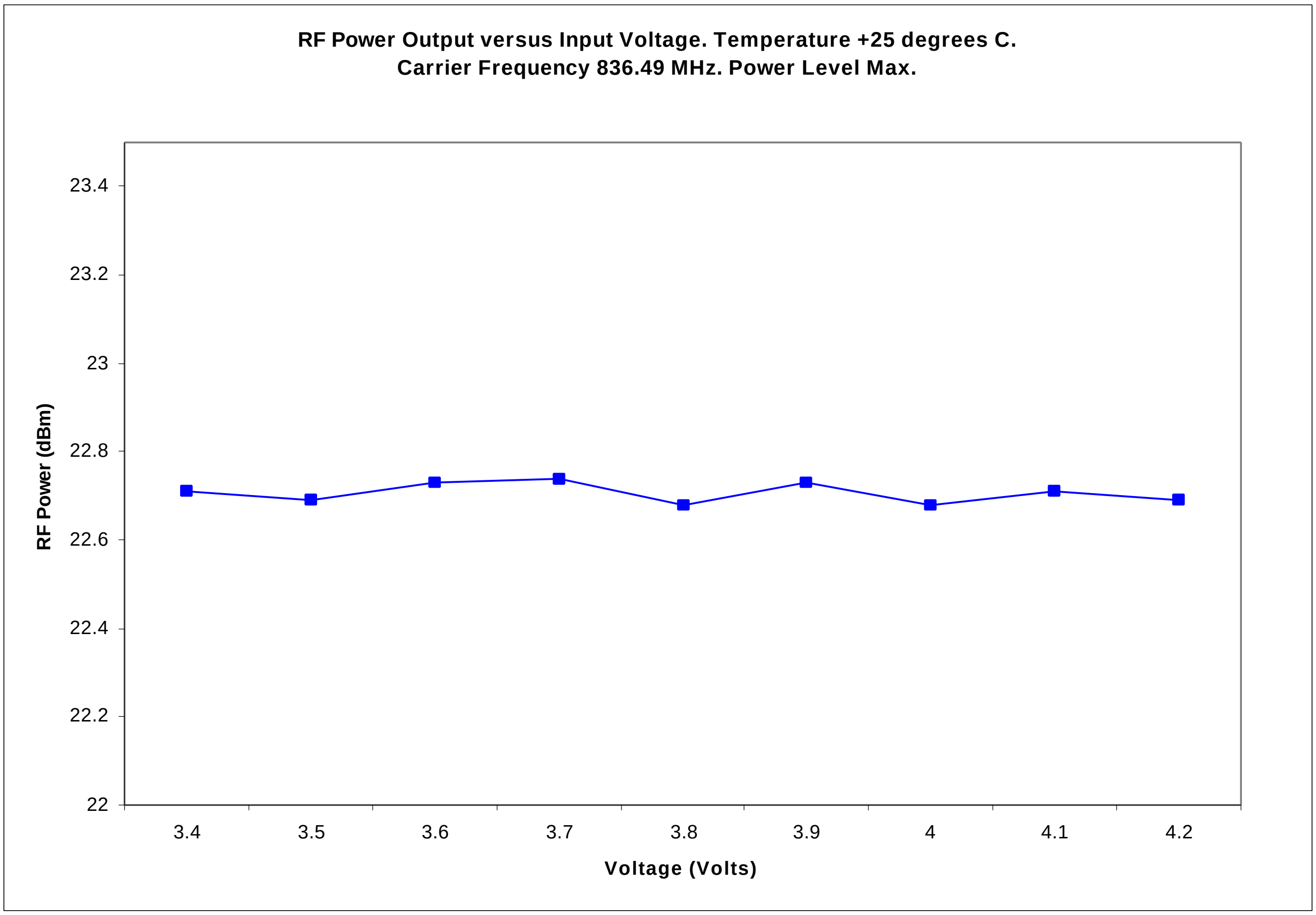


Exhibit 6M3

CDMA1900 RF Output Power vs. Temperature

Test Case	Channel	Temp. C	Volt.	Power (dBm)
CDMA1900 TX Max RF Output Power	Mid Band	-30	3.8	23.45
CDMA1900 TX Max RF Output Power	Mid Band	-20	3.8	23.45
CDMA1900 TX Max RF Output Power	Mid Band	-10	3.8	23.37
CDMA1900 TX Max RF Output Power	Mid Band	0	3.8	23.1
CDMA1900 TX Max RF Output Power	Mid Band	10	3.8	23.39
CDMA1900 TX Max RF Output Power	Mid Band	20	3.8	23.27
CDMA1900 TX Max RF Output Power	Mid Band	30	3.8	23.16
CDMA1900 TX Max RF Output Power	Mid Band	40	3.8	23
CDMA1900 TX Max RF Output Power	Mid Band	50	3.8	23.1
CDMA1900 TX Max RF Output Power	Mid Band	60	3.8	22.9

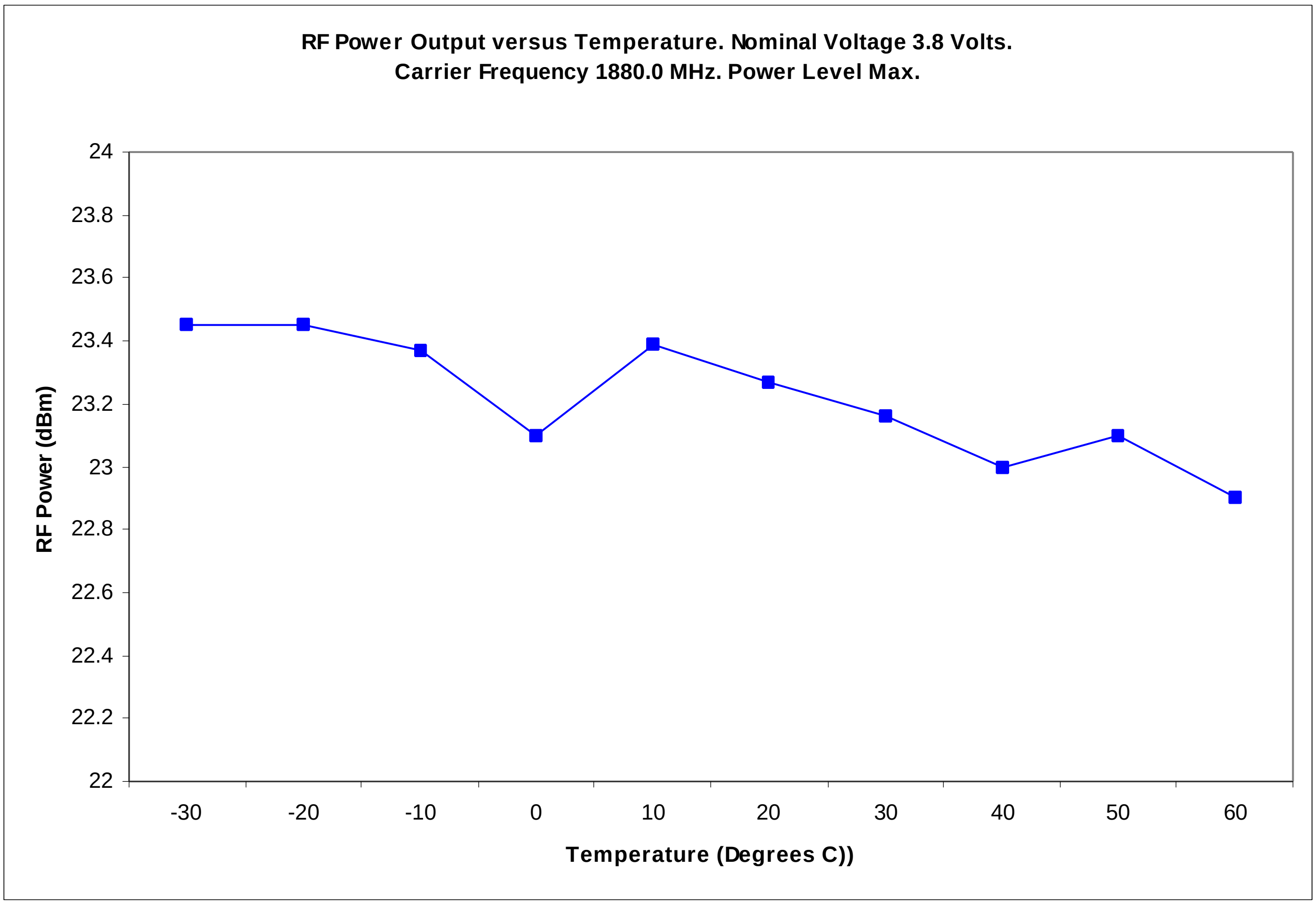


Exhibit 6N1

1900 MHz CDMA MODULATION CHARACTERISTICS

Para: Part 2.1047 (d) and Part 24

4. Modulation

This chapter defines the theoretical requirements of the modulator, inclusive of the differential encoder. The modulator receives the bits from the encryption unit and produces an RF modulated signal. The information bits are first differentially encoded and then passed to the modulator. The modulation is GMSK (Gaussian Minimum Shift Keying) with a BT product of 0.3.

4.1 MODULATION FORMAT

4.1.1 Modulating Bit Rate

The modulating bit rate is 1/T = 1625/6 kb/s (approximately 270.833 kb/s).

4.1.2 Start And Stop Of The Burst

The bits contained within a burst are defined in chapter 2. For the purpose of the modulator specification that follows, the bits entering the differential encoder prior to the first bit of the burst and following the last bit of the burst are consecutive logical ones and are denoted by the term dummy bits which define the start and end points of the useful and active parts of the burst as shown in Figure 4.1. The actual state of these bits is left to the manufacturer's implementation subject to the requirement that all performance specifications of this volume are met. Nothing is specified about the actual phase of the modulator output signal outside of the useful part of the burst. Figure 4.1 depicts the relationship between the active and useful part of the burst, the tail bits and dummy bits for a normal burst. The useful part of the burst lasts for 147 modulating bits.

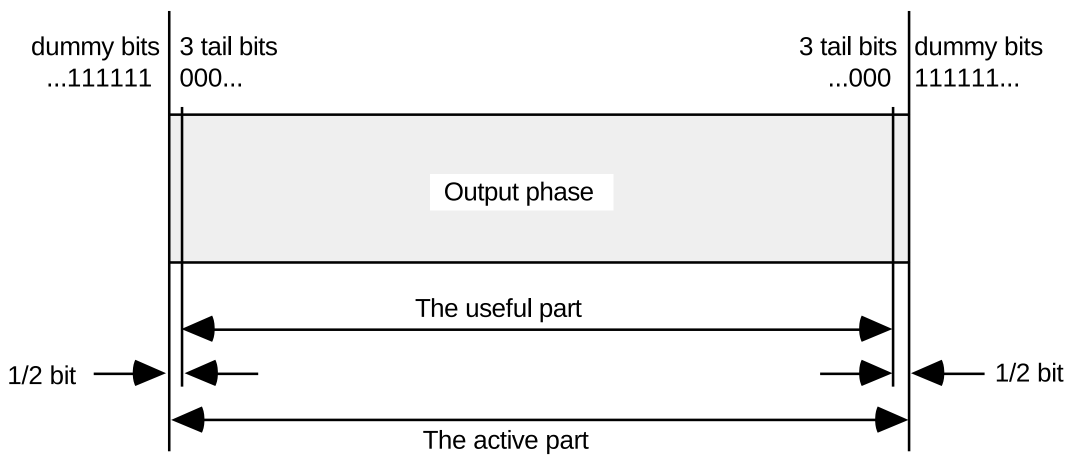


Figure 4.1: Normal Burst

4.1.3 Differential Encoding

Each data value $d_i = [0,1]$ is differentially encoded. The output of the differential encoder is:

$$\hat{d}_i = d_i \oplus d_{i-1}$$

where $\oplus$ denotes modulo 2 addition.

The modulating data value α_i input to the modulator is:

$$\alpha_i = 1 - 2\hat{d}_i$$

where $\alpha_i \in \{-1, 1\}$

4.1.4 Filtering

The modulating data values α_i as represented by Dirac pulses excite a linear filter with impulse response defined by:

$$g(t) = h(t) \otimes \mathrm{rect}\left(\frac{t}{T}\right)$$

where the function rect(x) is defined by:

$$\mathrm{rect}\left(\frac{t}{T}\right) = \frac{1}{T} \quad \text{for } |t| < \frac{T}{2}$$

$$\mathrm{rect}\left(\frac{t}{T}\right) = 0 \quad \text{otherwise}$$

and $\otimes$ means convolution. h(t) is defined by:

$$h(t) = \frac{e^{\left(\frac{-t^2}{2\sigma^2 T^2}\right)}}{\sqrt{2\pi}\,\sigma T} \quad \text{where } \sigma = \frac{\sqrt{\ln(2)}}{2\pi BT} \quad \text{and } BT = 0.3$$

where B is the 3 dB bandwidth of the filter with impulse response h(t), and T is the duration of one input data bit.

4.1.5 Output Phase

The phase of the modulated signal is:

$$\varphi(t') = \sum_i \alpha_i \pi h \int_{-\infty}^{t' - iT} g(u)\,du$$

where the modulating index h is 1/2 (maximum phase change in radians is p/2 per data interval).
The time reference t' = 0 is the start of the active part of the burst as shown in Figure 4.1. This is also the start of the bit period of bit number 0 (the first tail bit) as defined in chapter 2.

4.1.6 Modulation

The modulated RF carrier, except for start and stop of the TDMA burst may therefore be expressed as:

$$x(t') = \sqrt{\frac{2E_c}{T}} \cos\left(2\pi f_0 t' + \varphi(t') + \varphi_0\right)$$

where E_c is the energy per modulating bit, f_0 is the center frequency and φ_0 is a random phase and is constant during one burst.

Exhibit 6O1

1900 MHz: OCCUPIED BANDWIDTH

Per 2.1049 and 24.238 (a,b,c,d) the exhibits presented illustrates the modulation that exists in a 1900 MHz Cellular System.

The exhibit presented shows the occupied bandwidth and adjacent channel power graphs for CDMA modulation.

Exhibit	Description	Frequency	Power Level
6o2	Occupied Bandwidth	Mid Band	Max
6o2b	Occupied Bandwidth (1XRTT)	Mid Band	Max
6o3	Adjacent Channel Power	Mid / Low / High Bands	Max
6o3b	Adjacent Channel Power (1XRTT)	Mid / Low / High Bands	Max

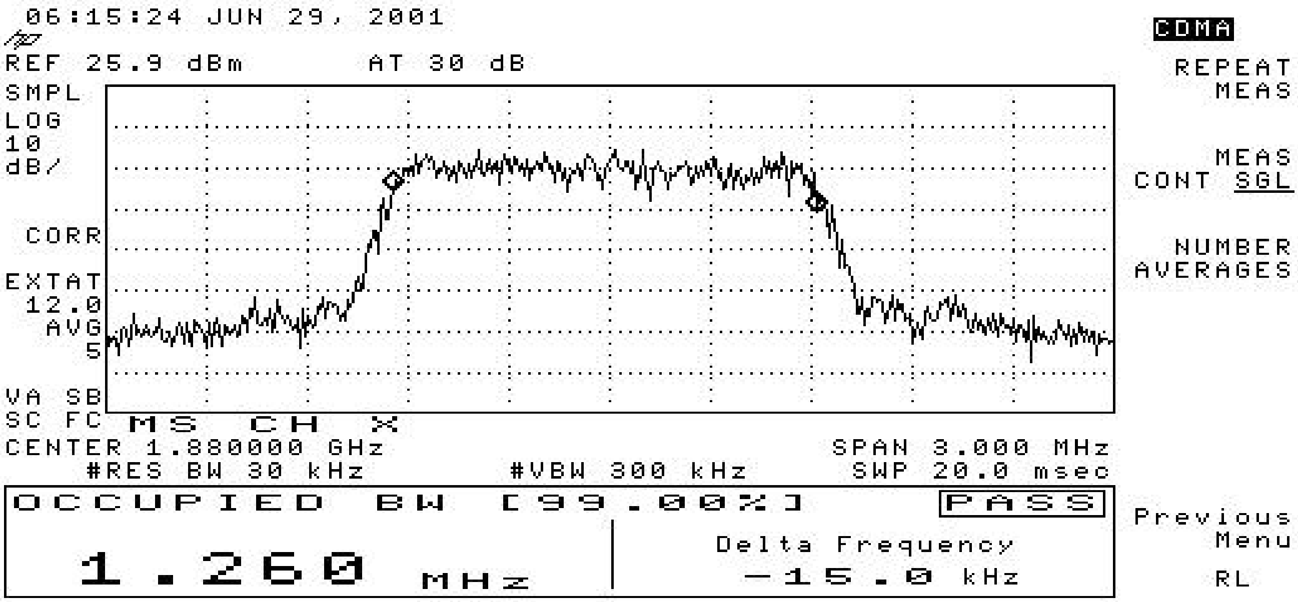
The unit under test is set up per TIA/EIA IS-98C Section 4.4.5. To obtain the occupied bandwidth plot, waveform's 99% total integrated power bandwidth is measured by using Hewlett Packard HP8593E Spectrum Analyzer e/w HP85725C CDMA Personality. Adjacent Channel Power is measured with the same equipment. The following equipment are also used:

Adjacent Channel Power (ACPR) is measured by using Hewlett Packard HP8593E Spectrum Analyzer e/w HP85725C CDMA Personality. This routine uses Integration Bandwidth Method (IBW) which performs a frequency sweep through Integration bandwidth of 1.4 MHz using a resolution bandwidth much narrower than the channel bandwidth (30 kHz). The total carrier power is automatically measured and the adjacent channel power ratio is computed as the ratio of total carrier power vs power measured at offset frequencies.

HP EPM-441A Power Meter (S/N: US37480855)
HP 66309B Dual Output Mobile Comm. DC Source (S/N: US39050133)

Exhibit 6O2

Occupied Bandwidth



Occupied Bandwidth (1XRTT)

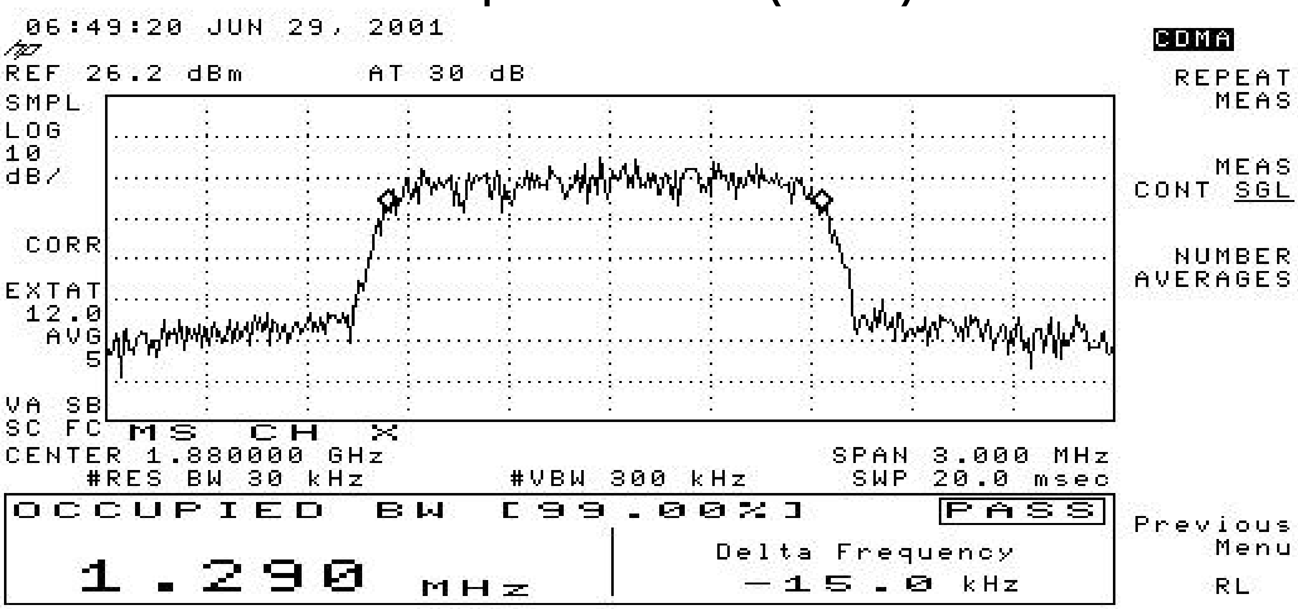
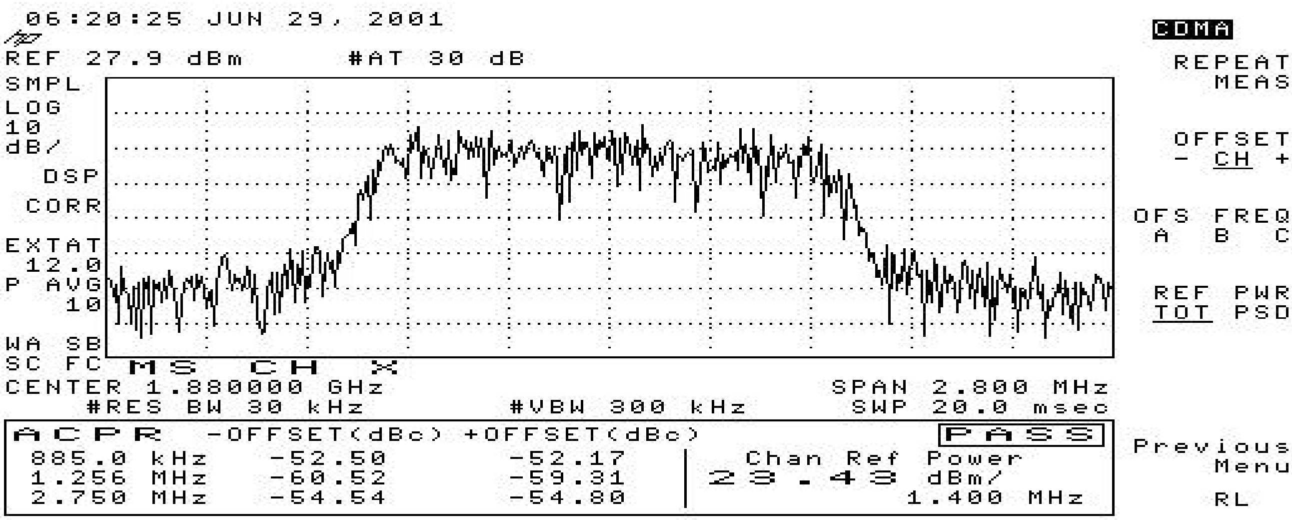


Exhibit 6O3

acpwr01-channel 600



acpwr01-channel 600 (1XRTT)

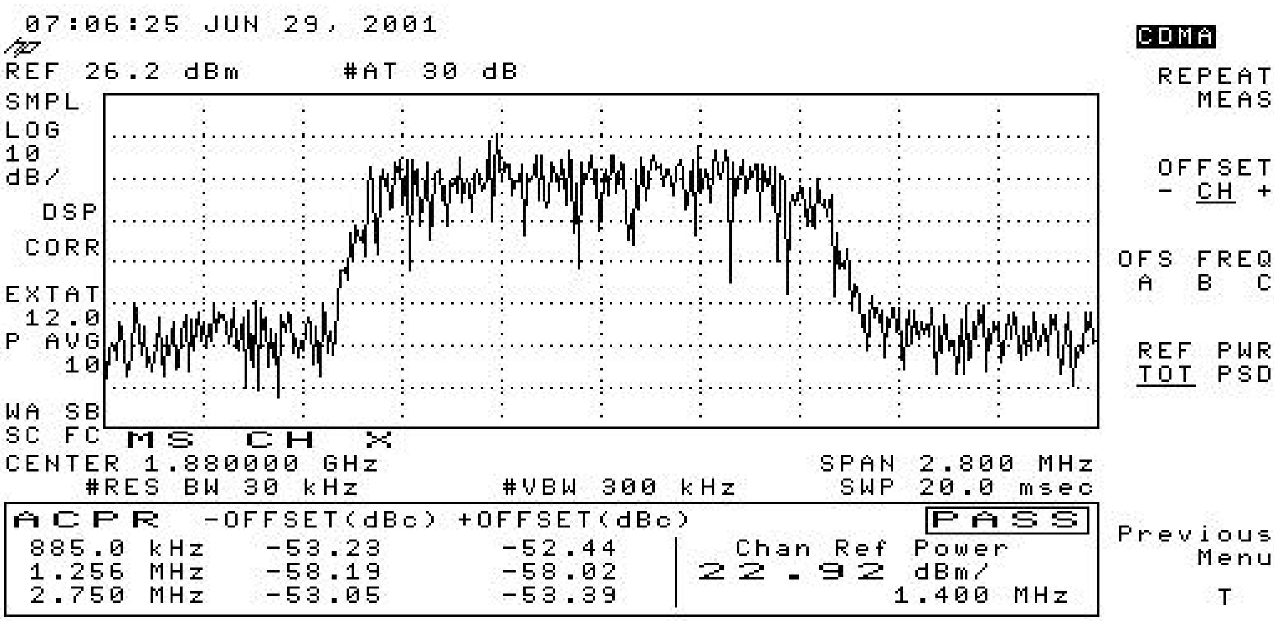
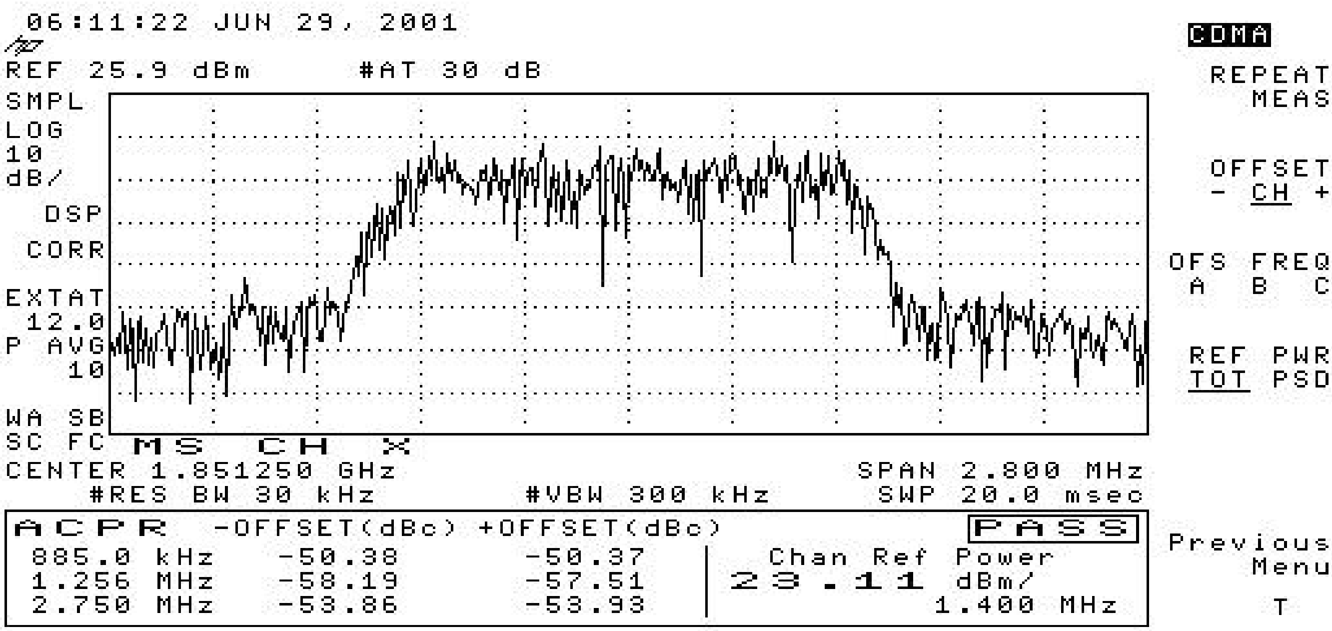


Exhibit 6O3 (continued)

acpwr01-channel 25



acpwr01-channel 25 (1XRTT)

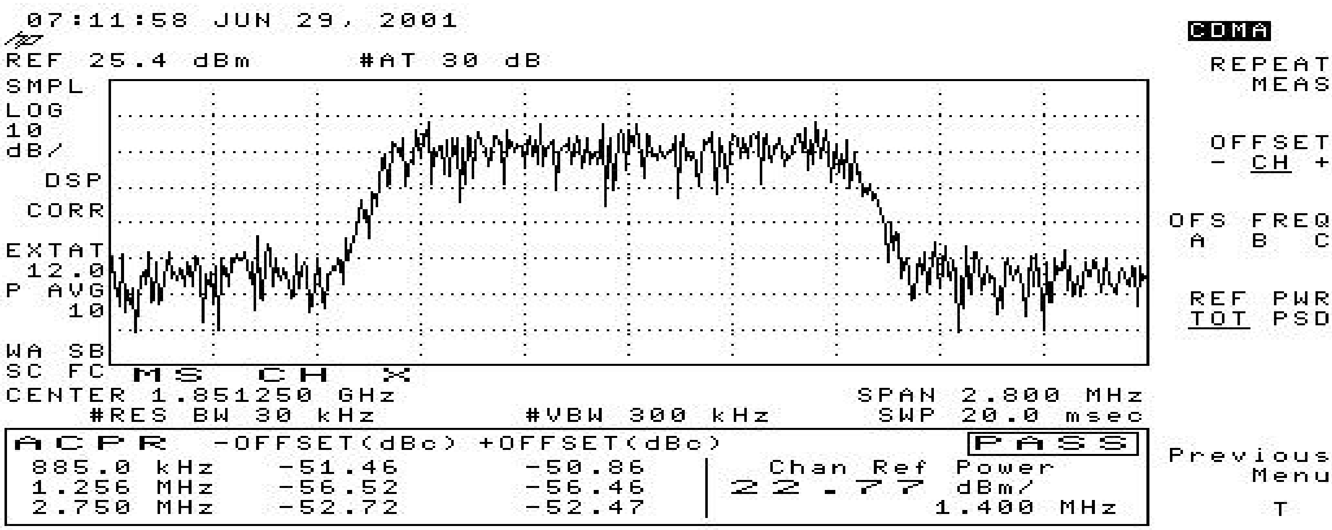
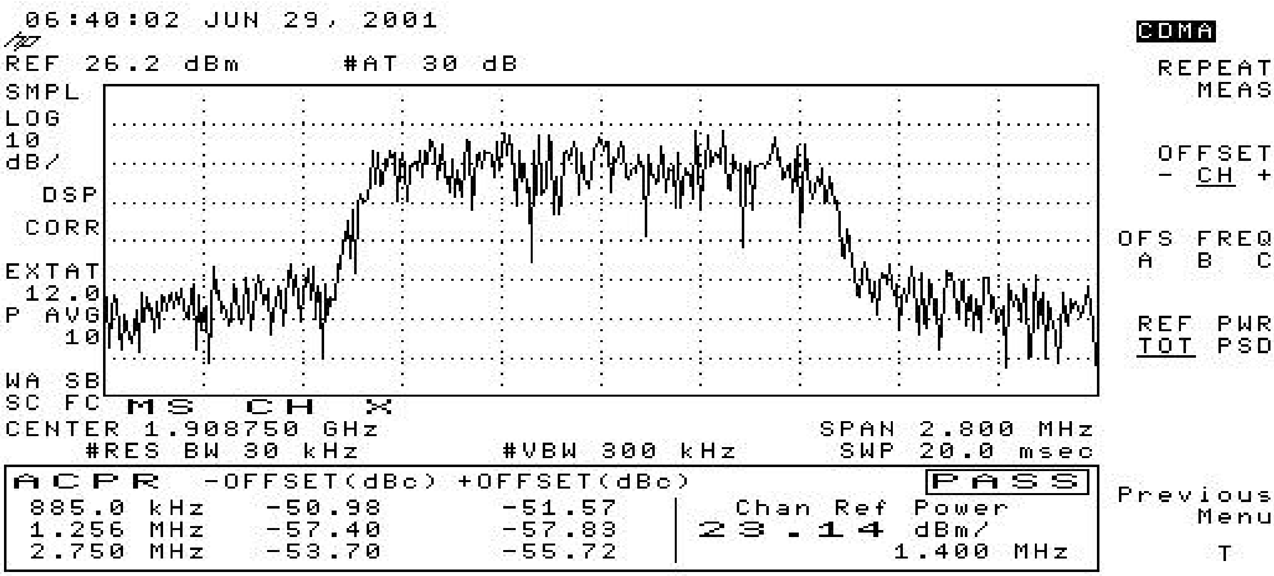


Exhibit 6O3 (continued)

Acpwr02 - channel 1175



Acpwr02 - channel 1175 (1XRTT)

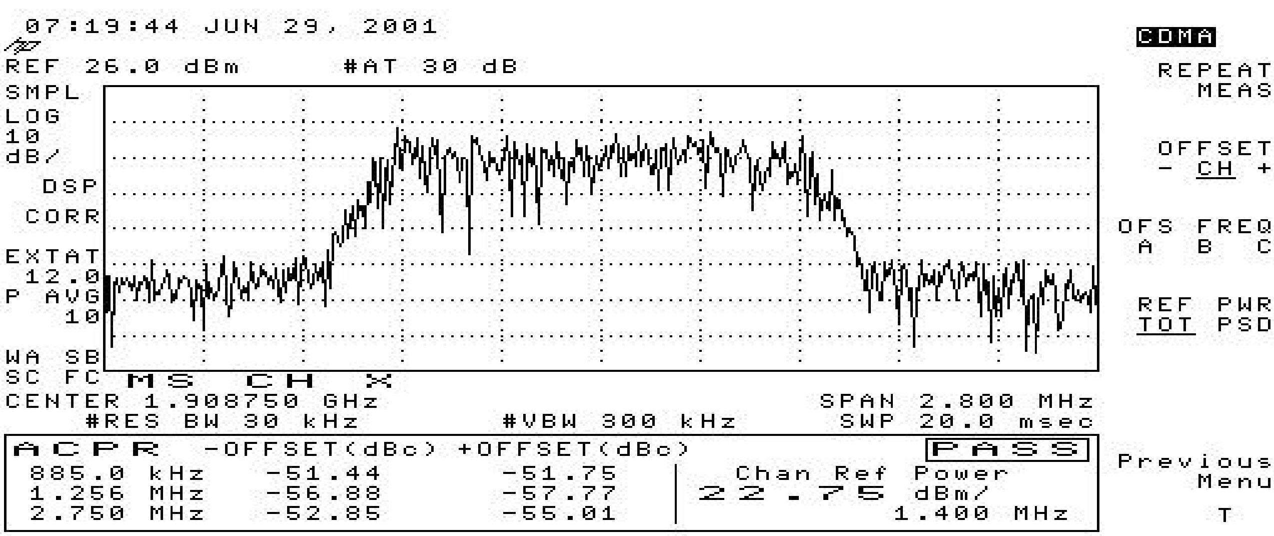


Exhibit 6P1

1900 MHz CDMA SPURIOUS EMISSIONS (Conducted)

Per 2.1051 Spurious emissions utilizing a properly loaded antenna.

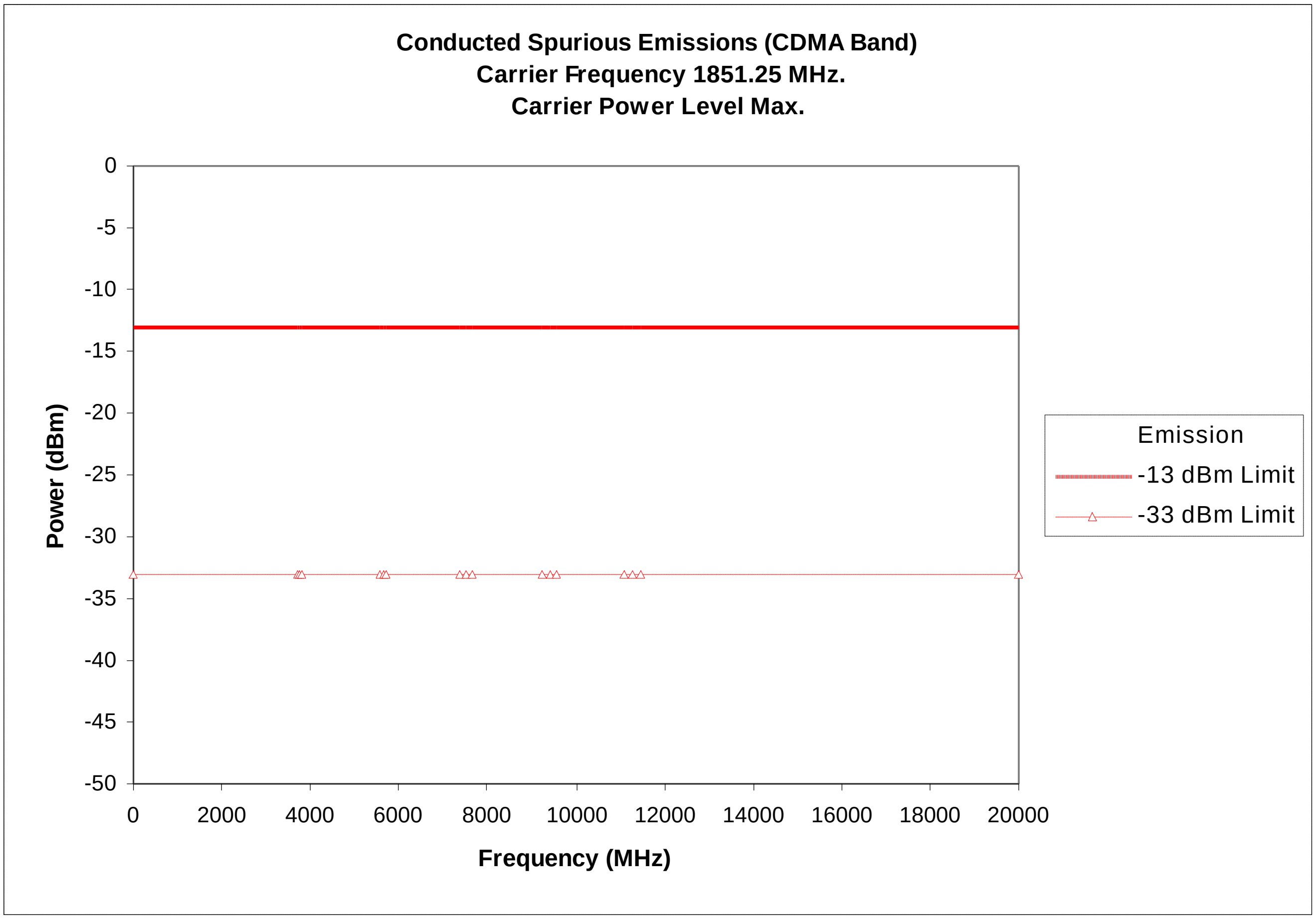
EXHIBIT #	FREQUENCY	Output Power level
6P2	Low band	0
6P3	Low band	7

The measurements are made per TIA/EAI IS-98C Sect. 4.5.1 using the following equipment:

HP E7405A EMC Spectrum Analyzer 9 kHz – 26.5 GHz (S/N: US39150143)
HP EPM-441A Power Meter (S/N: US37480855)
HP 66309B Dual Output Mobile Comm. DC Source (S/N: US39050133)

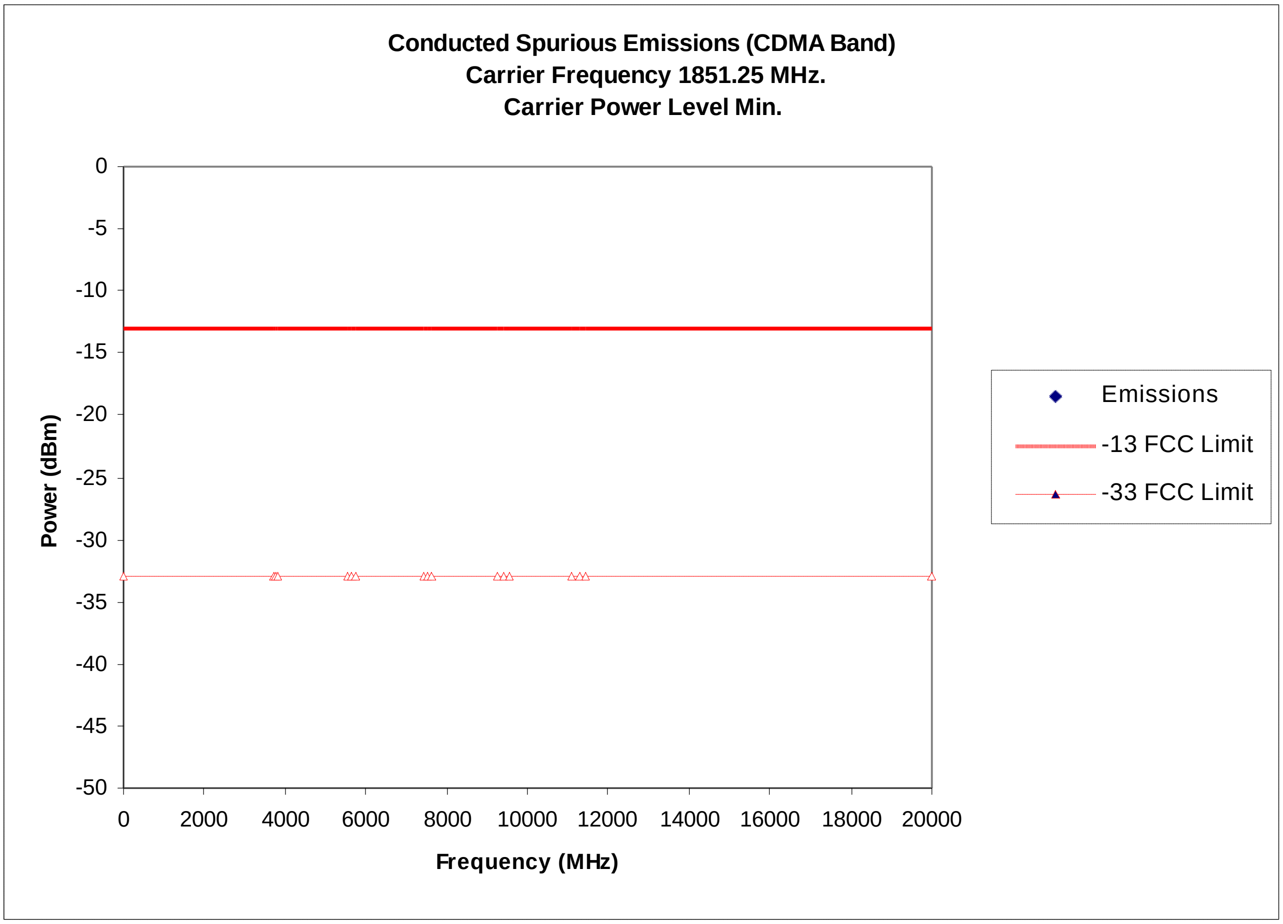
Test Result: There is no emission to report within 20 dB of the limit specified.

Exhibit 6P2



There is no emission to report within 20 dB of the limit specified.

Exhibit 6P3



There is no emission to report within 20 dB of the limit specified.

Exhibit 6Q1

1900 MHz CDMA SPURIOUS EMISSIONS (Radiated)

Per 2.1053 and Part 24, field strength of spurious radiation was measured at Underwriters Laboratories Inc. Research Triangle Park, NC site. The measurement procedure is per EIA IS-137 conducted on a 3 meter test site. Results are shown on the following exhibit.

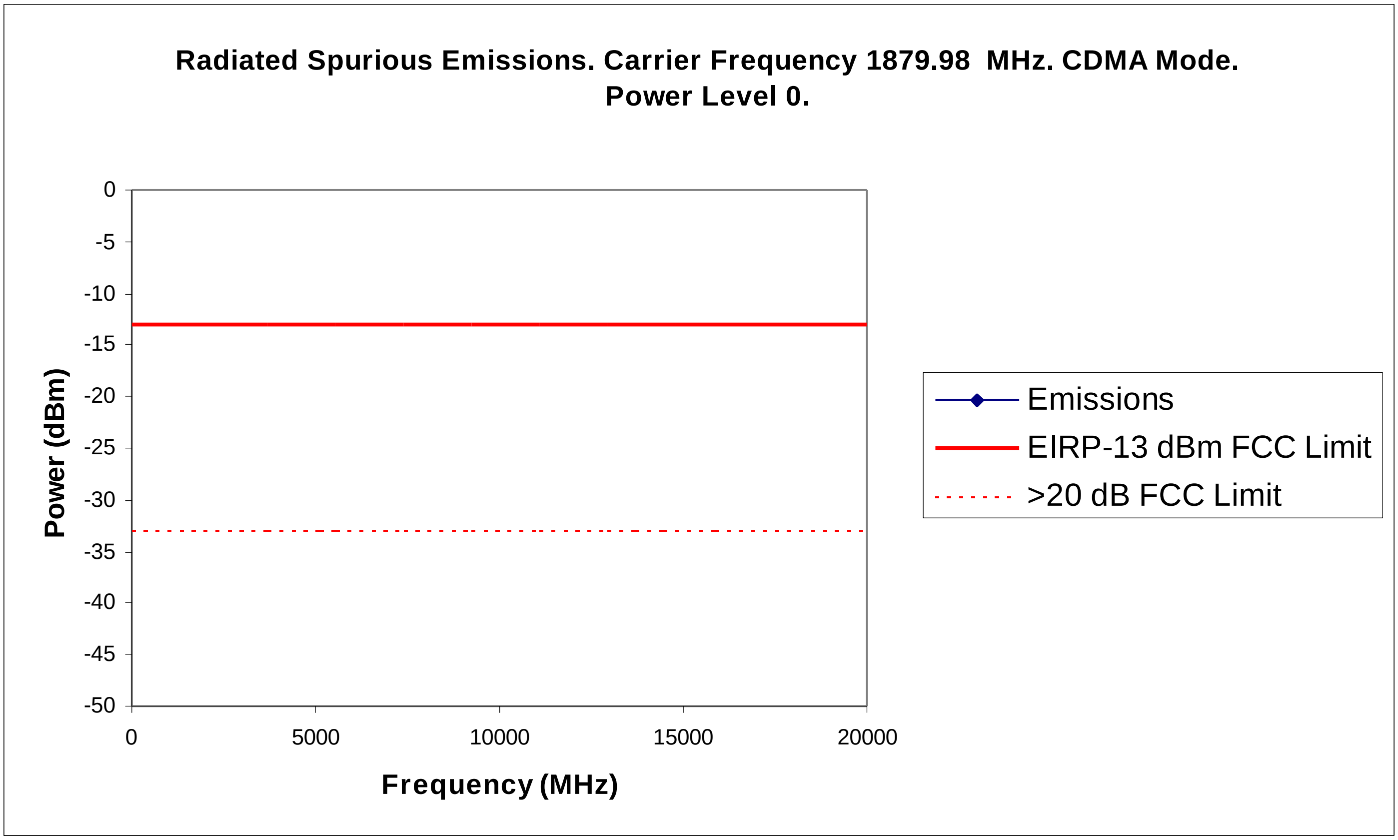
Note: The spectrum was examined through the 10^{th} harmonic of the carrier. Measurements recorded are peak measurements.

EXHIBIT	FREQUENCY	OUTPUT POWER LEVEL
6Q2	Mid Band	0

The measurements are made by using the 8572A detection system (S/N: SAR0001) which includes:

8566B Spectrum Analyzer
85650A Quasi Peak Detector
HP Amplifier 8449B
HP Signal Generator 8657B

Exhibit 6Q2



There is no emission to report within 20 dB of the limit specified.

Exhibit 6R1

1900 MHz FREQUENCY STABILITY

Per 2.1055 (a)(1),(b),(d)(2)

Testing was conducted at mid-channel (600), 1880.0 MHz at power level 0.

EXHIBIT #	Voltage	Temperature
6R2	3.4 to 4.2 Volts (varied)	+25 C
6R3	3.8 Volts	Varied

Note: The manufacturers rated voltage for the battery is 3.4 to 4.2 VDC.

The measurements are made per TIA/EAI IS-98C Sect. 4.1.1 using the following equipment:

HP 66309B Dual Output Mobile Comm. DC Source (S/N: US39050133)
HP 83712B CW Signal Generator 10 MHz – 20 GHz (S/N: US37100945)
Anritzu MT 8802A Radio Communications Analyzer 300 kHz – 3 GHz (S/N: MB25017)
ESPEC Temperature Chamber S/N: (91004533)

Exhibit 6R2

CDMA 1900 Frequency Stability vs. Voltage

Test Case Name	Channel	Voltage	Temp. C	Freq. Error (Hz)
CDMA1900 TX Frequency Accuracy	Mid Band	3.4	25	11.8
CDMA1900 TX Frequency Accuracy	Mid Band	3.5	25	-4.2
CDMA1900 TX Frequency Accuracy	Mid Band	3.6	25	8.9
CDMA1900 TX Frequency Accuracy	Mid Band	3.7	25	-11.4
CDMA1900 TX Frequency Accuracy	Mid Band	3.8	25	6.4
CDMA1900 TX Frequency Accuracy	Mid Band	3.9	25	-10.7
CDMA1900 TX Frequency Accuracy	Mid Band	4	25	-9.9
CDMA1900 TX Frequency Accuracy	Mid Band	4.1	25	-15.2
CDMA1900 TX Frequency Accuracy	Mid Band	4.2	25	8.4

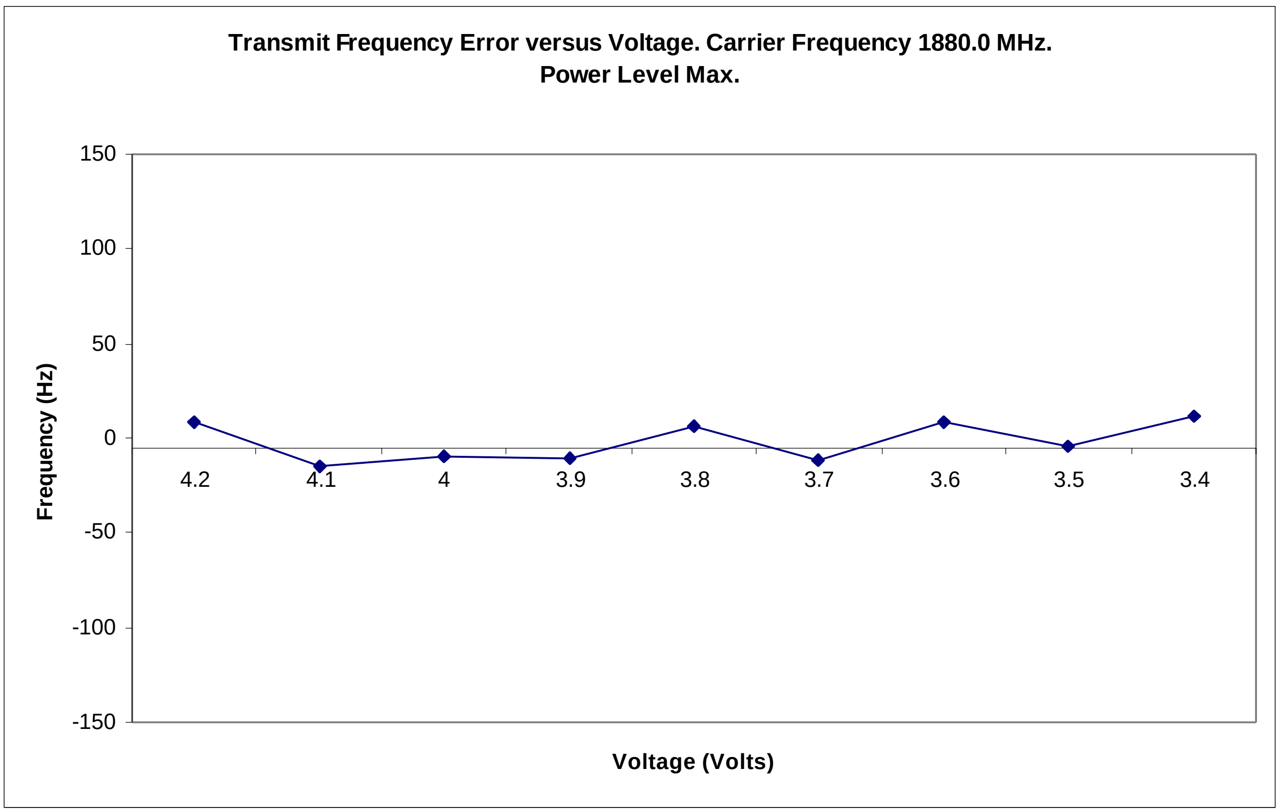


Exhibit 6R3

CDMA 1900 Frequency Stability vs. Temperature

Test Case	Channel	Temp. C	Volt.	Freq. Error (Hz)
CDMA1900 TX Frequency Accuracy	Mid Band	-30	3.8	2.2
CDMA1900 TX Frequency Accuracy	Mid Band	-20	3.8	8.8
CDMA1900 TX Frequency Accuracy	Mid Band	-10	3.8	-2.4
CDMA1900 TX Frequency Accuracy	Mid Band	0	3.8	5.4
CDMA1900 TX Frequency Accuracy	Mid Band	10	3.8	-8.1
CDMA1900 TX Frequency Accuracy	Mid Band	20	3.8	1.1
CDMA1900 TX Frequency Accuracy	Mid Band	30	3.8	-31.2
CDMA1900 TX Frequency Accuracy	Mid Band	40	3.8	18.1
CDMA1900 TX Frequency Accuracy	Mid Band	50	3.8	16
CDMA1900 TX Frequency Accuracy	Mid Band	60	3.8	26