EXHIBIT 9a

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9a 1. Summary of Cellular Mode (FM AMPS and CDMA) Characteristics - FCC 2.1033 (c)

(1) Types of emission

40K0F8W	F3E voice
40K0F1D	F3D supervisory audio tones, signaling tones
1M25F9W	F1D wideband data signal

(2) Frequency range

The frequency range of the equipment if Domestic Public Cellular Radio Telecommunications Service bands, 824 - 849 MHz and 869 - 894 MHz regardless of whether in cellular system operation for FM or CDMA modulation. The channel spacing is 30 kHz for Fm and 1.25 MHz for CDMA.

(3) Operating power levels

The transmitter output power is independent of whether the equipment operates in the cellular system FM or CDMA mode. The equipment supports Class 3 Mobile Station Power Class, and its power output capability is reported to the Land Station via Station Class Mark. The equipment will respond to commands from the Land Station to change power levels as defined in the EIA/TIA/IS-98 Specification.

(4) Maximum output power

The equipment supports the maximum output power for Class 3 Mobile Station which is -2 dBW ERP, and meets the 7 W ERP (+8 dBW) maximum power limitation of Section 22.904.

(6) Transmitter adjustment procedure

All frequency adjustments are set at the factory and there are no frequency field adjustments for this product. Under digital mode, frequency is locked to the base station and controlled by VCTCXO adjustments to offset any possible errors.

(7) Electronic Serial Number (ESN)

The phone complies with all requirements for ESN under Part 22.919 (see Exhibit 3).

(8) Modulation techniques

AMPS Mode

The F3E audio modulation via DSP.

CDMA Mode

The CDMA cellular mode is as described in the following exerptss from IS-95.

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. 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 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 Figure 6.1.3.1-2. 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.

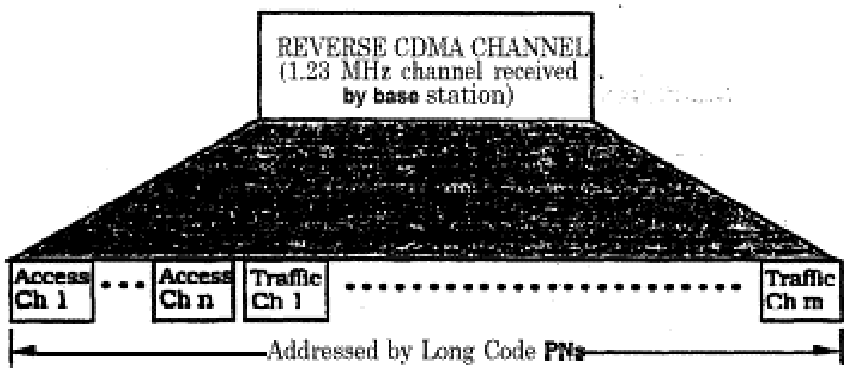

Figure 6.1.3.1-1. Example of Logical Reverse CDMA Channels Received at a Base Station

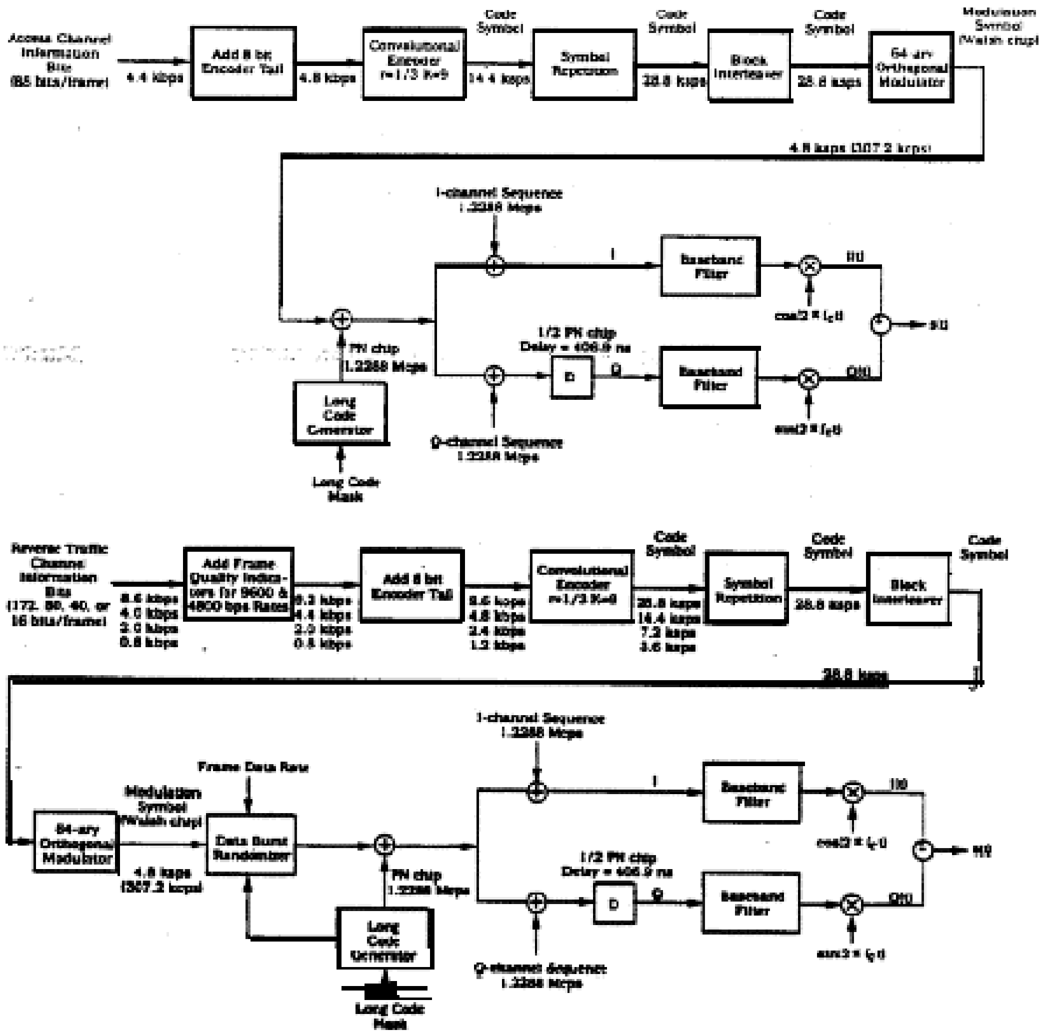

Figure 6.1.3.1-2. Reverse CDMA Channel Structure

After adding frame quality indicators for both the 9600 bps and 4800 bps rates (see 6.1.3.3.2.1) and adding eight Encoder Tail Bits (see 6.1.3.3.2.2). data frames may be transmitted on the Reverse Traffic Channel at data rates of 9600, 4800. 2400. and 1200 bps. The Reverse Traffic Channel may use any of these data rates for transmission. The transmission duty cycle on the Reverse Traffic Channel varies with the transmission data rate. Specifically, the transmission duty cycle for 9600 bps frames is 100 percent. the transmission duty cycle for 4800 bps frames is 50 percent, the transmission duty cycle for 2400 bps frames is 25 percent, and the transmission duty cycle for 1200 bps frames is 12.5 percent as shown in Table 6.1.3.1.1-1. As the duty cycle for transmission varies proportionately with the data rate. the actual burst transmission rate is fixed at 28.800

code symbols per second. Since six code symbols are modulated as one of 64 modulation symbols for transmission. the modulation symbol transmission rate is fixed at 4800 modulation symbols per second. This results in a fixed Walsh chip rate of 307.2 kcps. The rate of the spreading PN sequence is fixed at 1.2288 Mcps, so that each Walsh chip is spread by four PN chips. Table 6.1.3.1.1- 1 defmes the signal rates and their relationship for the various transmission rates on the Reverse Traffic Channel.

The numerology is identical for the Access Channel except that the transmission rate is fixed at 4800 bps after adding eight Encoder Tail Bits (see 6.1.3.2.2). Each code symbol is repeated once, and the transmission duty cycle is 100 percent. Table 6.1.3.1.1-2 defines the signal rates and their relationship on the Access Channel.

6.1.3.1.1 Modulation Parameters

The modulation parameters for the Reverse Traffic Channel and the Access Channel are shown in Table 6.1.3-1.1- 1 and Table 6.1.3.1.1-2, respectively.

Table 6.1.3.1.1-1. Reverse Traffic Channel Modulation Parameters

	Data Rate (bps)				
Parameter	**9600**	**4800**	**2400**	**1200**	**Units**
PN Chip Rate	1.2288	1.2288	1.2288	1.2288	Mcps
Code Rate	1/3	1/3	1/3	1/3	bits/code sym
Transmit Duty Cycle	100.0	50.0	25.0	12.5	%
Code Symbol Rate	28,800	28,800	28,800	28,800	sps
Modulation	6	6	6	6	code sym/mod symbol
Modulation Symbol Rate	4800	4800	4800	4800	sps
Walsh Chip Rate	307.20	307.20	307.20	307.20	kcps
Mod Symbol Duration	208.33	208.33	208.33	208.33	μs
PN Chips/Code Symbol	42.67	42.67	42.67	42.67	PN chip/code symbol
PN Chips/Mod symbol	256	256	256	256	PN chip/mod symbol
PN Chips/Walsh Chip	4	4	4	4	PN chips/Walsh chip

Table 6.1.3.1.1-2. Access Channel Modulation Parameters

	Data Rate (bps)	
Parameter	**4800**	**Units**
PN Chip Rate	1.2288	Mcps
Code Rate	1/3	bits/code sym
Code Symbol Repetition	2	symbols/code sym
Transmit Duty Cycle	100.0	%
Code Symbol Rate	28.800	sps
Modulation	6	code sym/mod symbol
Modulation Symbol Rate	4800	sps
Walsh Chip Rate	307.20	kcps
Mod Symbol Duration	208.33	μs
PN Chips/Code Symbol	42.67	PN chip/code sym
PN Chips/Mod symbol	256	PN chip/mod symbol
PN Chips/Walsh Chip	4	PN chips/Walsh chip

6.1.3.1.2 Data Rates

-The Access Channel shall support fixed data rate operation at 4800 bps.

The Reverse Traffic Channel shall support variable data rate operation at 9600.4800.2400. and 1200 bps.

6.1.3.1.3 Convolutional Encoding

The mobile station shall convolutionally encode the data transmitted on the Reverse Traffic Channel and the Access Channel prior to interleaving. The convolutional code shall be rate 1/3 and has a constraint length of 9. The generator functions for this code shall be go equals 557 (octal), g_1 equals 663 (octal). and g_2 equals 711 (octal). This is a rate 1/3 code generating three code symbols for each data bit input to the encoder. These code symbols shall be output so that the code symbol (c_0) encoded with generator function go shall be output first, the code symbol (c_1) encoded with generator function g_1 shall be output second. and the code symbol (c_2) encoded with generator function g_2 shall be output last. The state of the convolutional encoder. upon initialization, shall be the all-zero state. The first code symbol output after initialization shall be a codesymbol encoded with generator function g_0.

Convolutional encoding involves the modulo-2 addition of selected taps of a serially time-delayed data sequence. The length of the data sequence delay is equal to K- 1. where K is the constraint length of the code. Figure 6.1.3-1 .3- 1 illustrates the encoder for the code specified in this section.

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 Figure 6.1.3.1-Z. The baseband filters shall have a frequency response S(f) that satisfies the limits given in Figure 6.1.3.1. 10- 1. Specifically. the normalized frequency response of the filter shall be contained within $\pm\delta_1$ in the **passband** $0 \leq f \leq f_p$ and shall be less than or equal to -62 in the **stopband** $f \geq f_s$. The numerical values for the parameters are $\delta_1 = 1.5$ dB, $\delta_2 = 40$ dB, $f_p = 590$ kHz, and $f_s = 740$ kHz.

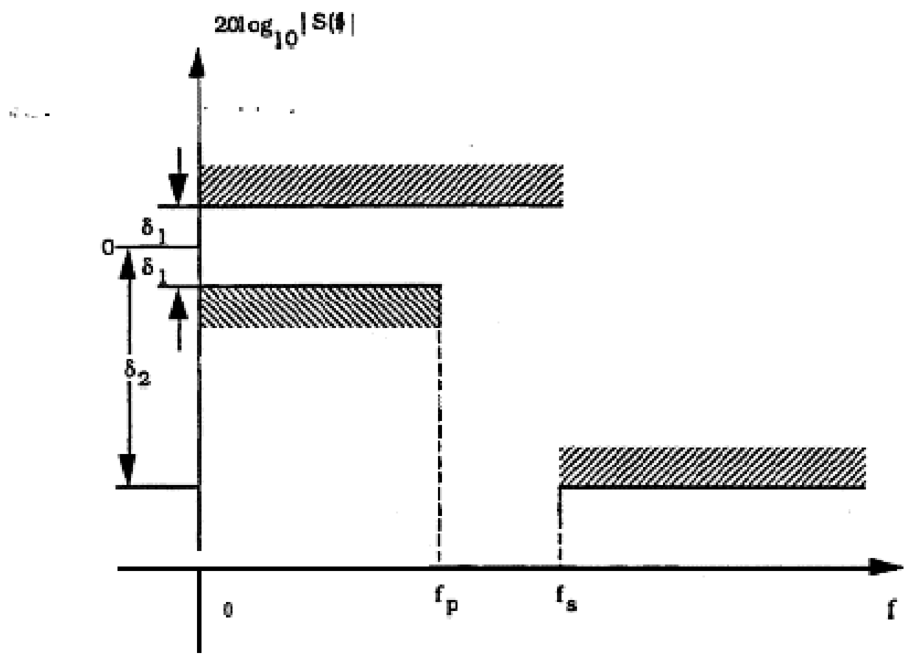

Figure 6.1.3.1.10-L Baseband Filters Frequency Response Limits

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

$$\text{Mean Squared Error} = \sum_{k=0}^{\infty} |\alpha s(kT_s - \tau) - h(k)|^2 \leq 0.03,$$

where the constants a and τ are used to minimize the mean squared error. The constant T_s is equal to 203.451... ns. which equals one quarter of a PN chip. The values of the coefficients h(k). for k c 48. are given in Table 6.1.3.1.10-l: h(k) = 0 for $k \geq 48$. Note that h(k) equals h(47 - k).

Exhibit 9a 2. Transmitter RF Power - FCC 2.1046 (a)

Note: Test phone RF calibration values were adjusted to match with specific antenna gain of this unit so that for test purposes the maximum transmit power of the test unit would be at the upper limit of the maximum allowed power output for a cellular phone. Power transmitted by marketed phones will in general be substantially lower.

Transmitter RF Power Output - FCC part 2, Paragraph 2.1046 (a)

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The RF output power was measured using the dipole equation,
P=(ExD)squared/49.2,
where E is the field strenght in V/m, D is the distance at 3 meters and P is the output power in watts.

		RF output power (W)	
carrier frequency (MHz)	channel	AMPS	CDMA
		measured	measured
824.04	991	.60	.60
836.49	383	.60	.60
848.97	799	.60	.60

Exhibit 9a 3. Modulation Audio Response Measured Data - FCC2.1047 (a)

Baseband Audio Response

See Exhibit 9d for CDMA and AMPS mode transmit objective loudness ratio (TOLR), audio frequency (frequency < 3900 Hz), modulation audio response .

Modulated signal was measured with an HP 8920 communications analyzer and an HP 3588A spectrum analyzer. Audio frequency measurements are supplemented by following higher frequency (f requency > 3 kHz) measurements.

Audio Frequency Response (> 3 kHz)

freq	dev (dB)	dB from 3 kHz	upper limit
3000	-22.26	0	0.00
3500	-29	-6.74	-2.68
4000	-68	-45.74	-5.00
4500	-55	-32.74	-7.04
5000	-58	-35.74	-8.87
5900	-69	-46.74	-11.75
5900	-69	-46.74	-35.00
6000	-69	-46.74	-35.00
6100	-66	-43.74	-35.00
6100	-66	-43.74	-12.33
7000	-59	-36.74	-14.72
8500	-69	-46.74	-18.09
10000	-69	-46.74	-20.92
12000	-74	-51.74	-24.08
15000	-75	-52.74	-27.96
15000	-75	-52.74	-28.00
20000	-83	-60.74	-28.00
25000	-92	-69.74	-28.00
30000	-91	-68.74	-28.00

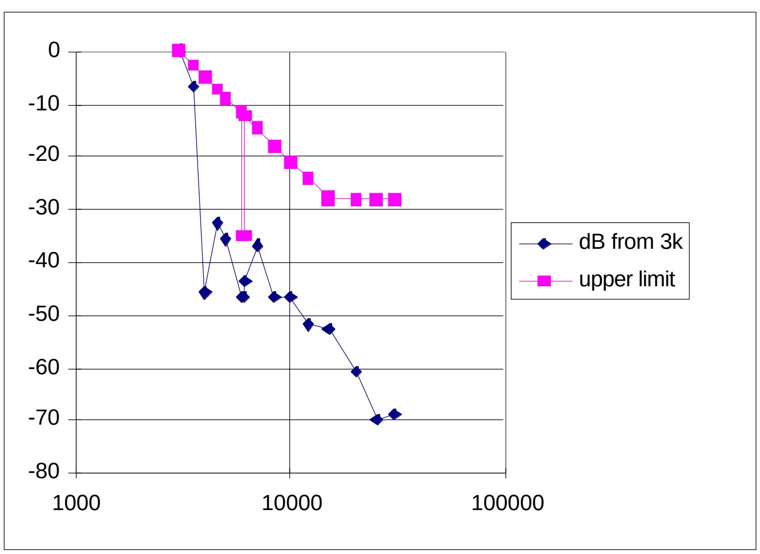

Exhibit 9a 4 Transmitter Modulation Requirement - FCC 2.1047 (b)

Transmitter Modulation Requirement - FCC Part 2, Paragraph 2.1047 (b)

Measured with HP8920 RF communication analyzer

Modulation Limiting

audio input level (dB) (0dB=8kHz dev)	FM deviation (kHz peak) modulation frequency		
	400 Hz	1 kHz	2.7 kHz
-20	2.9	4.701	6.4
-15	3.1	5.43	7.32
-10	3.5	6.32	8.82
-5	4	7.21	9.93
0	4.6	8	10.74
5	5.5	9.16	10.7
10	9.6	10.34	10.71
15	11.1	10.7	10.67
20	12	11.11	10.82

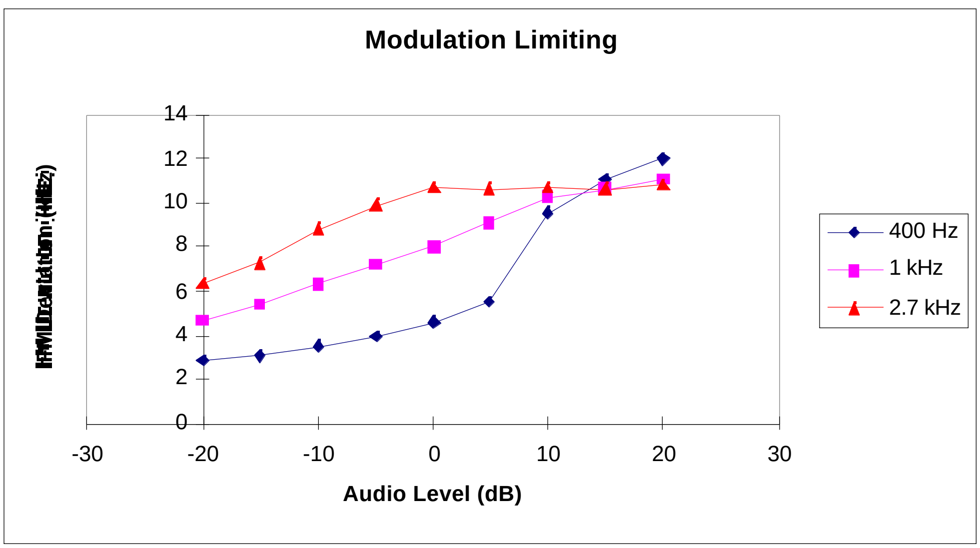

Exhibit 9a 5. Occupied Bandwidth Measured Data - FCC 2.1049

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Exhibit 9a 6
Conducted Spurious Emissions Test Results - FCC 2.1051, 22.917

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Total measured cable/attenuator loss in front of spectrum analyzer : 1.6 dB

FM AMPS Mode High Power

low band - channel 991					
	Frequency (MHz)	Measured Level (dBm)	actual level(dBm)	specification limit (dBm)	Analyzer front end attenuation
1	824.04	24.7	26	-	40
2	1648.08	-66	-64.7	-13	40
3	2472.12	-68	-66.7	-13	10
4	3296.16	-79	-77.7	-13	10
5	4120.2	-77	-75.7	-13	10
6	4944.24	-52	-50.7	-13	10
7	5768.28	-64	-62.7	-13	0
8	6592.32	-47	-45.7	-13	10
9	7416.36	<-87	<-87	-13	10
10	8240.4	<-90	<-90	-13	10

mid band - channel 383					
	Frequency (MHz)	Measured Level (dBm)	actual level(dBm)	specification limit (dBm)	Analyzer front end attenuation
1	836.49	24.7	26	-	40
2	1672.98	-52	-50.7	-13	10
3	2509.47	-49	-47.7	-13	10
4	3345.96	-62	-60.7	-13	10
5	4182.45	-67	-65.7	-13	10
6	5018.94	-66	-64.7	-13	10
7	5855.43	-54	-52.7	-13	10
8	6691.92	-48	-46.7	-13	10
9	7528.41	<-86	<-86	-13	10
10	8364.9	<-90	<-90	-13	0

high band - channel 799					
	Frequency (MHz)	Measured Level (dBm)	actual level(dBm)	specification limit (dBm)	Analyzer front end attenuation
1	848.97	24.8	26.1	-	40
2	1697.94	-61	-59.7	-13	10
3	2546.91	-65	-63.7	-13	10
4	3395.88	-56	-54.7	-13	10
5	4244.85	-55	-53.7	-13	10
6	5093.82	-70	-68.7	-13	10
7	5942.79	-80	-78.7	-13	10
8	6791.76	-83	-81.7	-13	10
9	7640.73	-82	-80.7	-13	10
10	8489.7	<-88	<-88	-13	10

6/22/99

Total measured cable/attenuator loss in front of spectrum analyzer : 1.6 dB

CDMA Mode High Power

low band - channel 991					
	Frequency (MHz)	Measured Level (dBm)	actual level(dBm)	specification limit (dBm)	Analyzer front end attenuation
1	824.04	23.4	25	-	40
2	1648.08	-28	-26.4	-13	40
3	2472.12	-71.5	-69.9	-13	10
4	3296.16	-69	-67.4	-13	10
5	4120.2	-80	-78.4	-13	10
6	4944.24	-58.5	-56.9	-13	10
7	5768.28	-67	-65.4	-13	0
8	6592.32	-57	-57	-13	10
9	7416.36	<-83	<-83	-13	10
10	8240.4	<-84	<-84	-13	10

mid band - channel 383					
	Frequency (MHz)	Measured Level (dBm)	actual level(dBm)	specification limit (dBm)	Analyzer front end attenuation
1	836.49	23.5	25.1	-	40
2	1672.98	-63	-61.4	-13	10
3	2509.47	-54	-52.4	-13	10
4	3345.96	-65	-63.4	-13	10
5	4182.45	-69	-67.4	-13	10
6	5018.94	-70	-68.4	-13	10
7	5855.43	-70	-68.4	-13	10
8	6691.92	-70	-68.4	-13	10
9	7528.41	-85	-83.4	-13	10
10	8364.9	-86	-84.4	-13	0

high band - channel 799					
	Frequency (MHz)	Measured Level (dBm)	actual level(dBm)	specification limit (dBm)	Analyzer front end attenuation
1	848.97	23.4	25	-	40
2	1697.94	-77	-75.4	-13	10
3	2546.91	-77	-75.4	-13	10
4	3395.88	-70	-68.4	-13	10
5	4244.85	-76	-74.4	-13	10
6	5093.82	-73	-71.4	-13	10
7	5942.79	-86	-84.4	-13	10
8	6791.76	<-95	<-95	-13	10
9	7640.73	<-95	<-95	-13	10
10	8489.7	<-95	<-95	-13	10