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

Justification for CDMA bandwidth of 1.25 MHz

Reference: TIA/EIA/IS-95

Chip rate is 1.228 MHz (see page 6-10 of IS-95 {attached}). When we look 3 dB down from the signal we find 1.25 MHz. Channel spacing is normally set at this 1.25 MHz. Also one can reference baseband filtering requirements (page 6-27 TIA/EIA/IS-95 {attached}) for filtering frequency response limits.

Arlie Payne
Regulatory Engineer

2.983 Devices and circuitry provided for determining and stabilizing frequency:

A voltage controlled, temperature compensated, crystal oscillator (VCTCXO) is employed as a frequency reference for all of the Transceiver local oscillators. This crystal oscillator is specified to remain within +/- 2.5pmm over temperature and voltage variations. The lock status indicator of all synthesizers is monitored by the microprocessor and an out of lock condition will inhibit transmission. The subscriber station monitors the received signal and adjusts the frequency of the VCTCXO, this corrects any errors between the mobile frequency and the base station transmitter. The mobile is locked to the base station.

Arlie Payne
Senior Regulatory Engineer
QUALCOMM Incorporated

Limiting power:

Transmitted power is monitored by an RF detector diode which is coupled from the Power Amplifier (PA) output. The detected DC voltage is fed into a processor which uses a calibration lookup table along with an offset correction and temperature correction table to control power limits. When the RF power exceeds a predetermined limit the gain of the stage preceding the PA is reduced.

Arlie Payne
Senior Regulatory Engineer
QUALCOMM Incorporated

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 modulation process for the Reverse CDMA Channel is as 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.

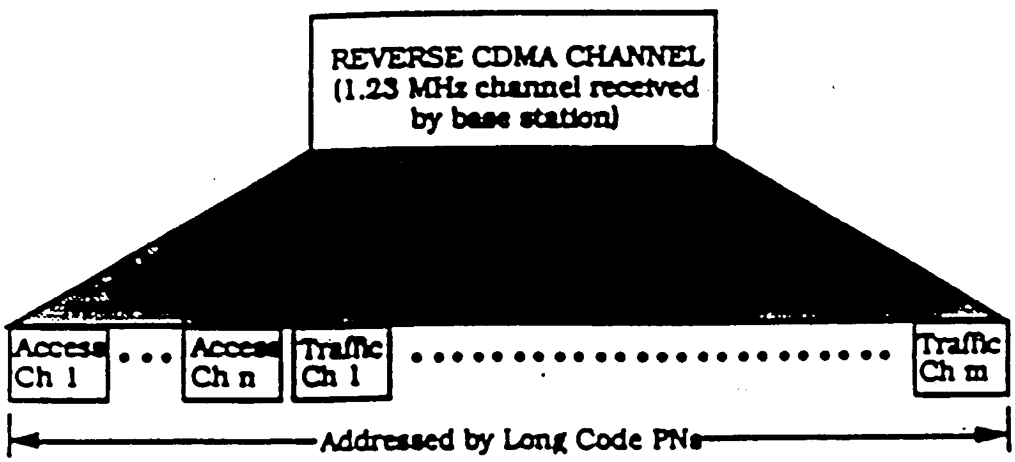

Figure 6.1.3.1-1. Example of Logical Reverse CDMA Channels Received at a Base Station

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 6.1.3.1-2. 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 $0 \le f \le f_p$ and shall be less than or equal to $-\delta_2$ in the stopband $f \ge f_s$. 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.

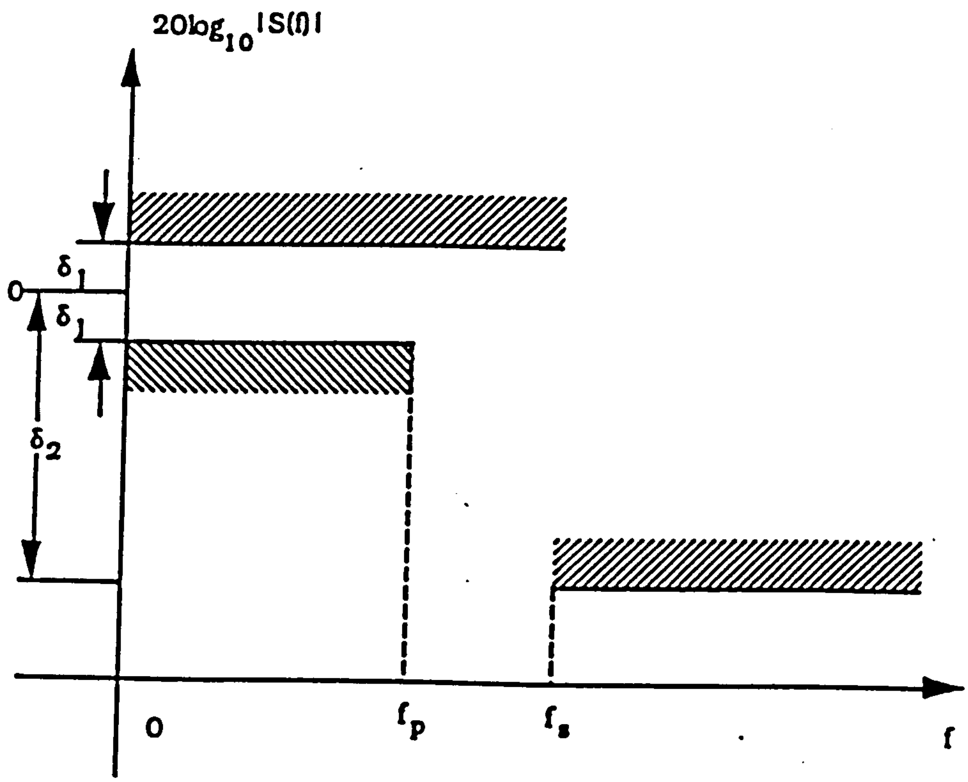

Figure 6.1.3.1.10-1. Baseband Filters Frequency Response Limits

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

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

where the constants α 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 $k < 48$, are given in Table 6.1.3.1.10-1; $h(k) = 0$ for $k \ge 48$. Note that h(k) equals h(47 - k).