CHAPTER 2

R2 Signaling Tones and Pulse Code Modulation Line Signaling

This chapter describes the R2 signaling tones generated and detected by the MFCR2 transceiver cards, and the R2 pulse code modulation (PCM) 2-bit line signaling transmitted and received by E1 digital interface cards.

Forward and Backward Signaling Tones

Table 2-1 through Table 2-4 provide R2 signaling information based on ITU-T Q.441 as it applies specifically to the Argentina telephone network.

Table 2-1 R2 Signaling Group 1 Forward Signals

Token Data Field	Designation	Frequencies	Meaning
1	G-I-1	1380 + 1500 Hz	Digit 1
2	G-I-2	1380 + 1620 Hz	Digit 2
3	G-I-3	1500 + 1620 Hz	Digit 3
4	G-I-4	1380 + 1740 Hz	Digit 4
5	G-I-5	1500 + 1740 Hz	Digit 5
6	G-I-6	1620 + 1740 Hz	Digit 6
7	G-I-7	1380 + 1860 Hz	Digit 7
8	G-I-8	1500 + 1860 Hz	Digit 8
9	G-I-9	1620 + 1860 Hz	Digit 9
10	G-I-10	1740 + 1860 Hz	Digit 0
11	G-I-11	1380 + 1980 Hz	Reserved
12	G-I-12	1500 + 1980 Hz	Unaccepted
13	G-I-13	1620 + 1980 Hz	Routine testing
14	G-I-14	1749 + 1980 Hz	Reserved
15	G-I-15	1860 + 1980 Hz	For ANUM only

Table 2-2 R2 Signaling Group II Forward Signals

Token Data Field	Designation	Frequencies	Meaning
1	G-II-1	1380 + 1500 Hz	Non-priority subscriber
2	G-II-2	1380 + 1620 Hz	Priority
3	G-II-3	1500 + 1620 Hz	Maintenance
4	G-II-4	1380 + 1740 Hz	Coin box
5	G-II-5	1500 + 1740 Hz	Operator
6	G-II-6	1620 + 1740 Hz	Data Transmission
7	G-II-7	1380 + 1860 Hz	Reserved
8	G-II-8	1500 + 1860 Hz	Reserved
9	G-II-9	1620 + 1860 Hz	Reserved
10	G-II-10	1740 + 1860 Hz	Reserved
11	G-II-11	1380 + 1980 Hz	Reserved
12	G-II-12	1500 + 1980 Hz	Reserved
13	G-II-13	1620 + 1980 Hz	Reserved
14	G-II-14	1740 + 1980 Hz	Reserved
15	G-II-15	1860 + 1980 Hz	Reserved

Table 2-3 R2 Signaling Group A Backward Signals

Token Data Field	Designation	Frequencies	Meaning
1	A-1	1140 + 1020 Hz	Send next digit (n + 1)
2	A-2	1140 + 900 Hz	Send digit (n – 1)
3	A-3	1020 + 900 Hz	Number complete, send category and change over to reception of Group B signals
4	A-4	1140 + 780 Hz	Network congestion
5	A-5	1020 + 780 Hz	Send category and send ANUM
6	A-6	900 + 780 Hz	Set conversation
7	A-7	1140 + 660 Hz	Send digit (n – 2)
8	A-8	1020 + 660 Hz	Send digit (n – 3)
9	A-9	900 + 660 Hz	Send last digit
10	A-10	780 + 660 Hz	Start from first digit
11	A-11	1140 + 540 Hz	Reserved
12	A-12	1020 + 540 Hz	Reserved
13	A-13	900 + 540 Hz	Reserved
14	A-14	780 + 540 Hz	Reserved
15	A-15	660 + 540 Hz	Reserved

Table 2-4 R2 Signaling Group B Backward Signals

Token Data Field	Designation	Frequencies	Meaning
1	B-1	1140 + 1020 Hz	Idle
2	B-2	1140 + 900 Hz	Send recorded message
3	B-3	1020 + 900 Hz	Busy
4	B-4	1140 + 780 Hz	Congestion
5	B-5	1020 + 780 Hz	Unassigned number
6	B-6	900 + 780 Hz	Free with charging
7	B-7	1140 + 660 Hz	Free without charging
8	B-8	1020 + 660 Hz	Out of service
9	B-9	900 + 660 Hz	Reserved
10	B-10	780 + 660 Hz	Reserved
11	B-11	1140 + 540 Hz	Reserved
12	B-12	1020 + 540 Hz	Reserved
13	B-13	900 + 540 Hz	Reserved
14	B-14	780 + 540 Hz	Reserved
15	B-15	660 + 540 Hz	Reserved

Pulse Code Modulation Line Signaling

Table 2-5 describes the 2-bit, channel-associated PCM line signaling used by the VCO system equipped with E1 interface cards. Forward signals are used by originating or outgoing ports, while backward signals are generated by incoming ports.

Table 2-5 R2 Pulse Code Modulation Line Signaling

Number	Signal	Exchange Signaling Forward		Backward	
		A*f*	B*f*	A*b*	B*b*
1	Idle	1	0	1	0
2	Seize	0	0	1	0
3	Seize acknowledge	0	0	1	0
6a	Clear forward before answer	1	0	1	1
6a	Release guard	1	0	1	0
4	Seize acknowledge	0	0	1	1
4	Answer	0	0	0	1
6b	Clear forward after answer	0	0	1	0

Table 2-5 R2 Pulse Code Modulation Line Signaling (continued)

Number	Signal	Exchange Signaling Forward		Backward	
		A*f*	B*f*	A*b*	B*b*
7b	Release guard	1	0	1	0
5	Clear back	0	0	1	1
6a	Clear forward after clear back	1	0	1	1
7	Release guard	1	0	1	0
8	Blocking	1	0	1	1
9	Unblocking	1	0	0	0