



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 spans.

Forward and Backward Signaling Tones

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

Table 2-1 R2 Signaling Group I 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	—
12	G-I-12	1500 + 1980 Hz	Reject
13	G-I-13	1620 + 1980 Hz	Maintenance
14	G-I-14	1749 + 1980 Hz	—
15	G-I-15	1860 + 1980 Hz	End of number

Table 2-2 R2 Signaling Group II Forward Signals

Token Data Field	Designation	Frequencies	Meaning
1	G-II-1	1380 + 1500 Hz	Subscriber without priority
2	G-II-2	1380 + 1620 Hz	Subscriber with priority
3	G-II-3	1500 + 1620 Hz	Maintenance
4	G-II-4	1380 + 1740 Hz	Public Phone
5	G-II-5	1500 + 1740 Hz	Operator
6	G-II-6	1620 + 1740 Hz	Data
7	G-II-7	1380 + 1860 Hz	—
8	G-II-8	1500 + 1860 Hz	—
9	G-II-9	1620 + 1860 Hz	—
10	G-II-10	1740 + 1860 Hz	—
11	G-II-11	1380 + 1980 Hz	—
12	G-II-12	1500 + 1980 Hz	—
13	G-II-13	1620 + 1980 Hz	—
14	G-II-14	1740 + 1980 Hz	—
15	G-II-15	1860 + 1980 Hz	—

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 previous digit
3	A-3	1020 + 900 Hz	Number complete send category; 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 change to Group C signals
6	A-6	900 + 780 Hz	Number complete charge, setup voice path
7	A-7	1140 + 660 Hz	Send second previous digit
8	A-8	1020 + 660 Hz	Send third previous digit
9	A-9	900 + 660 Hz	Start from first digit
10	A-10	780 + 660 Hz	—
11	A-11	1140 + 540 Hz	—
12	A-12	1020 + 540 Hz	—
13	A-13	900 + 540 Hz	—
14	A-14	780 + 540 Hz	—
15	A-15	660 + 540 Hz	—

Table 2-4 R2 Signaling Group B Backward Signals

Token Data Field	Designation	Frequencies	Meaning
1	B-1	1140 + 1020 Hz	Not applicable
2	B-2	1140 + 900 Hz	Number changed
3	B-3	1020 + 900 Hz	Busy
4	B-4	1140 + 780 Hz	Congestion
5	B-5	1020 + 780 Hz	Unallocated number
6	B-6	900 + 780 Hz	Line free with charging
7	B-7	1140 + 660 Hz	Line free, no charge
8	B-8	1020 + 660 Hz	Out of order
9	B-9	900 + 660 Hz	—
10	B-10	780 + 660 Hz	—
11	B-11	1140 + 540 Hz	—
12	B-12	1020 + 540 Hz	—
13	B-13	900 + 540 Hz	—
14	B-14	780 + 540 Hz	—
15	B-15	660 + 540 Hz	—

Table 2-5 R2 Signaling Group C Backward Signals

Token Data Field	Designation	Frequencies	Meaning
1	C-1	1140 + 1020 Hz	Send next digit (n+1)
2	C-2	1140 + 900 Hz	Send previous digit
3	C-3	1020 + 900 Hz	Number complete send category; change over to reception of Group B signals
4	C-4	1140 + 780 Hz	Network congestion
5	C-5	1020 + 780 Hz	Send next number of subscriber B
6	C-6	900 + 780 Hz	Number complete charge, setup voice path
7	C-7	1140 + 660 Hz	Send second previous digit
8	C-8	1020 + 660 Hz	Send third previous digit
9	C-9	900 + 660 Hz	Start from first digit
10	C-10	780 + 660 Hz	—
11	C-11	1140 + 540 Hz	—
12	C-12	1020 + 540 Hz	—
13	C-13	900 + 540 Hz	—
14	C-14	780 + 540 Hz	—
15	C-15	660 + 540 Hz	—

Pulse Code Modulation Line Signaling

Table 2-6 describes the 2-bit, channel-associated PCM line signaling used by VCO systems that are equipped with E1 cards. Originating or outgoing ports use forward signals, while incoming ports generate backward signals. For more information on E1 cards, refer to the *Cisco VCO/4K Card Technical Descriptions*.

Table 2-6 R2 Pulse Code Modulation Line Signaling

Token Data Field	Signal	Forward		Backward	
		Af	Bf	Ab	Bb
1	Idle	1	0	1	0
2	Seizure	0	0	1	0
3	Seizure acknowledge	0	0	1	0
6a	Clear forward before answer	1	0	1	1
	Release guard	1	0	1	0
4	Seize acknowledge	0	0	0	1
4	Answer	0	0	0	1
6b	Clear forward after answer	1	0	0	1
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