

**Secondary Directory Number
and
Long Distance Signal
Distinctive Ringing and Call Waiting
Terminal-to-Network Interface**

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TABLE OF CONTENTS

	<u>Page</u>
Document History	1
Disclaimer	2
1.0 Distinctive Ringing/Call Waiting - Secondary Directory Number	3
1.1 Service Description	3
1.2 Feature Description	3
1.2.1 Distinctive Ringing - Secondary Directory Number	3
1.2.2 Distinctive Call Waiting - Secondary Directory Number	4
1.2.3 Second Secondary Directory Number	5
2.0 Distinctive Ringing/Call Waiting - Long Distance Signals	6
2.1 Service Description	6
2.2 Feature Description	6
2.2.1 Distinctive Ringing - Long Distance Signal	6
2.2.2 Distinctive Call Waiting - Long Distance Signal	7
3.0 References	8
3.1 Industry Canada Certification Standard Cs-03	8

DOCUMENT HISTORY

1	January 1991	Initial issue

2	September 1993	Inclusion of Long Distance Signal Distinctive Ringing and Call Waiting Signals

3	October 1994	Modifications to Service Description of Long Distance Signal No technical change to interface

4	February 1995	Changes include house-keeping changes, making the document generic by eliminating reference to trademarks and adjusting the cadences to accommodate all switching technology.

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1.0 DISTINCTIVE RINGING/CALL WAITING - SECONDARY DIRECTORY NUMBER

1.1 Service Description

This feature allows more than one Directory Number (DN) to be assigned to one single-party line. The distinctive ringing and call waiting signals identify which of these directory numbers was called, enabling the subscribers to appropriately answer the call. The distinctive call waiting signal may only apply where a customer has subscribed to Call Waiting.

When the Primary Directory Number (PDN) is called, the standard ringing or call waiting signal is applied. When a Secondary Directory Number (SDN) is called, a coded ringing or call waiting signal is applied.

These signals were initially intended for human listening, rather than automatic detection by a terminal, and thus no attempt has been made to standardize their characteristics.

The characteristics of the signals at a subscriber's location depend on the central office switch technology serving the subscriber. However, the characteristics presented by all switch technologies providing distinctive ringing and call waiting will fall within the ranges specified in this document. For some calls, the first part of the ringing signal may not be complete.

The terminal design shall adhere to requirements stated in Reference 3.1.

1.2 Feature Description

1.2.1 Distinctive Ringing - Secondary Directory Number

In addition to normal ringing (1.5 to 2 sec ON, 4 to 4.5 sec OFF with the total cycle time of 6 sec that applies to all cases discussed in this paper), this service offers an additional distinctive ringing signal for a Secondary Directory Number (SDN).

The distinctive ringing is based on a cyclic variation of short and long bursts of the standard ringing signal. Depending on various technical constraints, the short burst of the ringing signal has a duration of 0.4 - 0.5 sec, the long burst 0.8 - 1.5 sec. The silent interval separating the bursts is 0.2 - 0.65 sec long.

The distinctive call waiting signals are described in the following table:

DN	Tone Signals
PDN	One long burst
First SDN	Two long or two short bursts or One short, one long burst or One long, one short burst or Three short

After about 10 sec delay, the call waiting signal may be repeated once.

1.2.3 Second Secondary Directory Number

At some locations, a second SDN may be available to enhance the distinctive ringing and call waiting feature. When a second SDN is provided, the timing specifications remain identical to those discussed above and the signals will be as follows:

Second SDN	One short, one long, one short burst or One long, one short, one long burst or Two short and one long burst
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Note: In only a few locations, the second SDN may be represented by one long, one short burst. This signal is not planned for use in any new location in the future, but may be still used in some existing switch installations. The signal of the second SDN will always be assigned in a way that will not interfere with the signal of the first SDN.

2.0 DISTINCTIVE RINGING/CALL WAITING - LONG DISTANCE SIGNALS

2.1 Service Description

The **Long Distance Signal** informs the telephone user of a long distance call terminating on a telephone set, by providing a distinctive ring when the phone is ON-HOOK and a distinctive call waiting tone when the phone is OFF-HOOK, on an existing call. The distinctive ring and the distinctive call waiting tone follow the same pattern to be easily identified by the end user. The distinctive call waiting tone may only apply where a customer has subscribed to Call Waiting.

The characteristics of the signals at a subscriber's location depend on the central office switch technology serving the subscriber. However, the characteristics presented by all switch technologies providing **Long Distance Signal** distinctive ringing and distinctive call waiting will fall within the ranges specified in this document. For some calls, the first part of the ringing signal may not be complete.

The terminal design shall adhere to requirements stated in Reference 3.1.

2.2 Feature Description

2.2.1 Distinctive Ringing - Long Distance Signal

The distinctive ringing is based on a cyclic variation of long and short bursts of the standard ringing signal. Depending on various technical constraints, the long burst of the ringing has the duration of 0.8 - 1.5 sec, the short burst has a duration of 0.4 - 0.5 sec, and the silent interval separating the bursts is 0.2 - 0.65 sec long.

The **Long Distance Signal** distinctive ringing consists of a long-short-short, or a short-long-short burst sequence. Normal ringing signal has a voltage of 105 VAC riding on nominal -48 VDC office battery bias. The frequency of the AC component is usually 20 Hz.

2.2.2 Distinctive Call Waiting - Long Distance Signal

When the called line is busy, a distinctive call waiting tone sounds in the called receiver, alerting the subscriber of a long distance call terminating on the line. The distinctive call waiting tone consists of a long-short-short, or a short-long-short burst sequence at frequency of 350 Hz to 480 Hz and level of -13 dBm to -17.5 dBm at the switch. The long burst of the call waiting signal is 275 to 300 ms in duration while the short burst is 75 to 100 ms long. The bursts are separated by 75 to 125 ms of silence. After about 10 sec delay, the call waiting signal may be repeated.

3.0 REFERENCES

3.1 Industry Canada Certification Standard CS-03

Standard for Terminal Equipment, Terminal Systems, Network Protection Devices, Connection Arrangements and Hearing Aids Compatibility. Current Issue