

## **Ringing, tones and dialling on analogue lines**

**Summary:** This document lists ringing cadences, tones and dialling signals implemented in France Telecom's network.

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## Contents

<b>1. DEFINITIONS .....</b>	<b>1</b>
1.1 RINGING DEFINITION.....	1
1.2 TONES DEFINITION.....	1
1.2.1 <i>Dialling tones definition</i> .....	1
1.2.2 <i>Ringing tone definition</i> .....	1
1.2.3 <i>Busy tone definition</i> .....	2
1.2.4 <i>ROC (AutoRappel) busy tone definition</i> .....	2
1.2.5 <i>False call tone definition</i> .....	2
1.2.6 <i>Call waiting signal definition</i> .....	2
1.2.7 <i>Special information tone definition</i> .....	2
<b>2. RINGING CHARACTERISTICS .....</b>	<b>2</b>
2.1 GENERAL CHARACTERISTICS.....	2
2.2 STANDARD RINGING.....	3
2.3 ROC (AUTORAPPEL) RINGING .....	3
<b>3. TONES CHARACTERISTICS .....</b>	<b>3</b>
3.1 GENERAL CHARACTERISTICS.....	3
3.2 DIALLING TONES.....	3
3.2.1 <i>Standard tone</i> .....	3
3.2.2 <i>Special dial tone</i> .....	4
3.2.3 <i>Message Waiting Indicator tone, deferred mode</i> .....	4
3.3 RINGING TONE.....	4
3.4 BUSY TONE .....	5
3.5 ROC (AUTORAPPEL) BUSY TONE .....	5
3.6 FALSE CALL TONE.....	6
3.7 CALL WAITING (INDICATION TO THE CALLED PARTY).....	6
3.8 SPECIAL INFORMATION TONE.....	7
<b>4. GLOSSARY .....</b>	<b>7</b>
<b>5. HISTORY .....</b>	<b>7</b>

## 1. Definitions

### 1.1 Ringing Definition

Two ringing are defined which differ by their cadence: a "standard" ringing and a ROC<sup>1</sup> supplementary ringing.

The ROC supplementary ringing is used when presenting a "ROC recall" (procedure implemented on the ROC - AutoRappel - service to advise the calling party that the destination party became available).

The standard ringing is used in any other case.

### 1.2 Tones definition

These tones may be classified into several groups: Dialling tone, Ringing tone, Busy tone and Special information tones.

#### 1.2.1 Dialling tones definition

Dialling tones are provided as the subscriber hangs up when the line is in quiescent state. Some dialling tones may also be provided within particular situations such as after operation of the Register Recall key ("R" key). They mark the connection to the dialling reception device (and are interrupted as soon as the first digit has been dialled by the subscriber).

To signal a particular state of the line (back to active state) or an external event (notification function via a Message Waiting Indicator with deferred mode, ADM : *Avis Différé de dépôt d'un Message*), these tones may adopt three different formats according to the table below:

		Unconditional forwarding state	
		Non activated	Activated
Notification by Message Waiting Indicator with deferred mode	Non activated	Standard tone	Special dial tone
	Activated	ADM tone	ADM tone

#### 1.2.2 Ringing tone definition

This tone is typically provided to the calling party during the call presentation period to the called party. It is a cadenced tone, but it is to note that the first burst is not always provided right from the beginning of call presentation to the called party (the cadence of this tone is not always synchronised with the call presentation time).

Note: In some call presentation configurations, a vocal recorded announcement may replace the ringing tone.

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<sup>1</sup> ROC = Completion of Call to Busy Subscriber (*Rappel automatique sur abonné Occupé*): this service allows a subscriber A whose call reaches correspondent B busy to be notified when subscriber B becomes available and to be provided with an automatic renewal of his call attempt, with no need to dial again. The trade name of the service is "AutoRappel".

### 1.2.3 Busy tone definition

This tone is provided to the calling party when the called party is found busy or when the call fails for unknown reasons. It is delivered for at least 1 minute duration. This time elapsed, if the subscriber remains in hang up state, the line passes into false call state.

### 1.2.4 ROC (AutoRappel) busy tone definition

This tone is provided to the calling party when the called party is found busy and the calling party is entitled to invoke the Completion of call to busy subscriber (AutoRappel) service. This tone is followed by a vocal announcement.

### 1.2.5 False call tone definition

This tone is delivered during the first minute of a "false call situation" but this time duration elapsed, if the subscriber remains hanged up, no more tone is provided on the line.

Note: a line is in a "false call situation" in any case where the subscriber remains in hang up state though the line was liberated due to correspondent's hang on, failure of a call, wrong operation from the subscriber (e.g., after hang up without dialling or on incomplete dialling).

### 1.2.6 Call waiting signal definition

Call waiting service consists in presenting an incoming call on a line already busy with a simple call (first degree occupation). The call waiting signal is a tone provided to the called party for a short period, superposed on the ongoing communication.

### 1.2.7 Special information tone definition

This tone is only used as a "jingle" on some network failure announcements.

## 2. Ringing characteristics

### 2.1 General characteristics

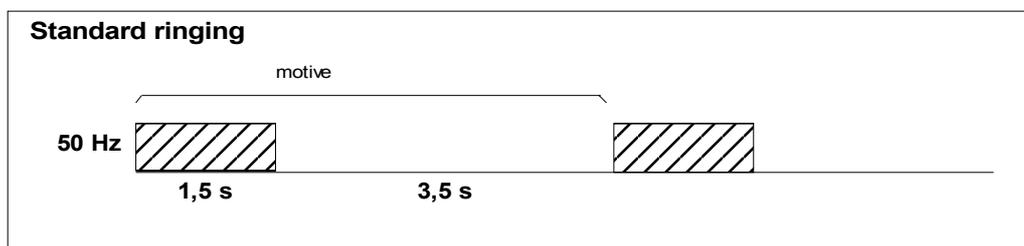
In order to ensure terminal equipment compatibility with possible new services implementing ringing schemes not described in this document, it is strongly recommended that terminal equipment be able to detect the upstream and downstream edges of the ringing signal envelopes.

The ringing signal current is a sine wave signal with the following characteristics:

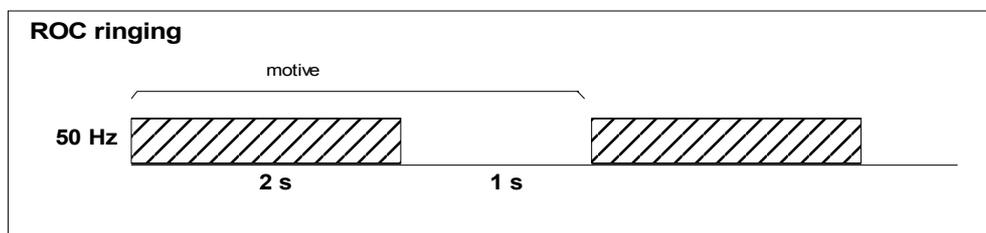
- Frequency: **50 Hz +/- 2 Hz**.
- Voltage **80 V eff +/- 10 V eff** superposed to **48 V dc (+ 6V – 3V)**.
- Tolerance on the cadence: +/- **10 %** (ref. note)

Note: on invocation of Calling Line Identification Presentation service, the tolerance on the first ringing current burst is between - 20 % and + 10 %.

## 2.2 Standard ringing



## 2.3 ROC (AutoRappel) ringing



## 3. Tones characteristics

### 3.1 General characteristics

Tolerance on frequency values:  $\pm 2$  Hz.

Tolerance on the cadence:  $\pm 10$  %.

Overall distortion due to each frequency: below 1,5 %.

The two first harmonics of each frequency must match a distortion rate below 1 %.

*General Note: Due to European standardisation, the 330 Hz and 440 Hz frequencies might respectively be replaced by 350 Hz and 425 Hz frequencies.*

### 3.2 Dialling tones

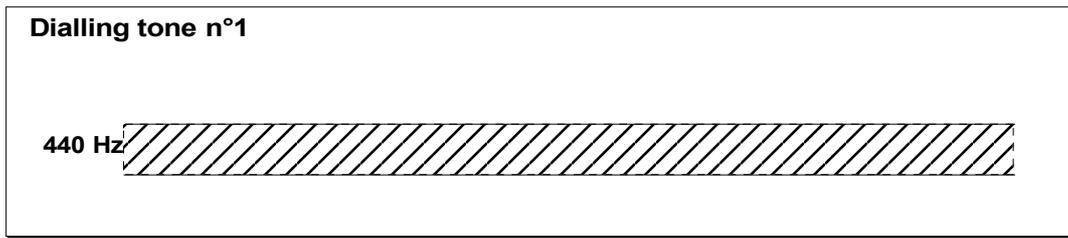
#### 3.2.1 Standard tone

This tone results from a continuous emission of a pulse with the following characteristics:

- Frequency: **440 Hz**.
- Emission level: **- 3,5  $\pm$  0,5 dBm<sup>02</sup>**.

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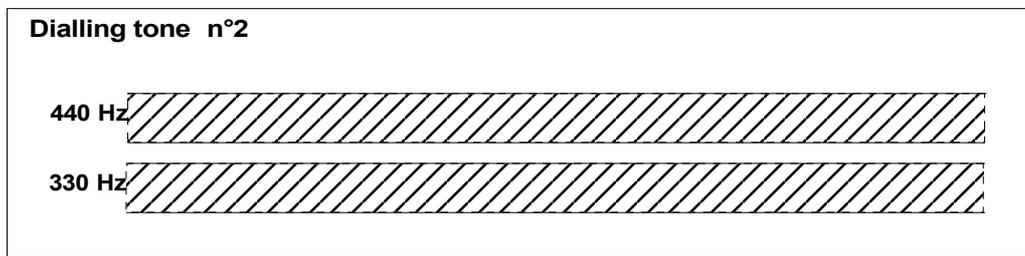
<sup>2</sup> The emission levels defined throughout this document take into account the France Télécom's transmission plan recommending, for subscriber's access line, - 7 dBr at the exchange output and 0 dBr at the exchange input, and a maximum loss of 11 dB at 1020 Hz of this subscriber line.



### 3.2.2 Special dial tone

This tone results from simultaneous and continuous emission of two frequency pulses at **330 Hz** and **440 Hz**.

- Emission level for **330 Hz** frequency: - 5 +/- 0,5 dBm0.
- Emission level for **440 Hz** frequency: - 8,5 +/- 0,5 dBm0.

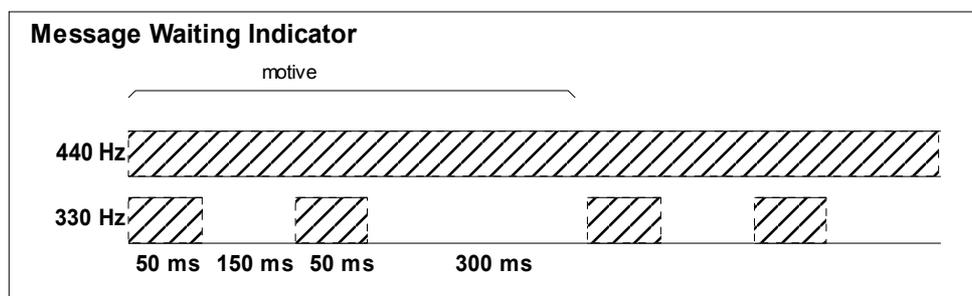


### 3.2.3 Message Waiting Indicator tone, deferred mode

This tone results from simultaneous emission of **440 Hz** frequency continuous pulse and a **330 Hz** frequency hatched motive (two bleeps repetition).

The repeated motive characteristics are:

- First emission duration for **330 Hz** frequency: **50 ms +/- 10 %**.
- Pause duration following the first emission: **150 ms +/- 10 %**.
- Second emission duration for **330 Hz** frequency: **50 ms +/- 10 %**.
- Pause duration following the second emission: **300 ms +/- 10 %**.
- Emission level for **330 Hz** frequency: - 5 +/- 0,5 dBm0.
- Emission level for **440 Hz** frequency : - 8,5 +/- 0,5 dBm0 (continuous transmission).

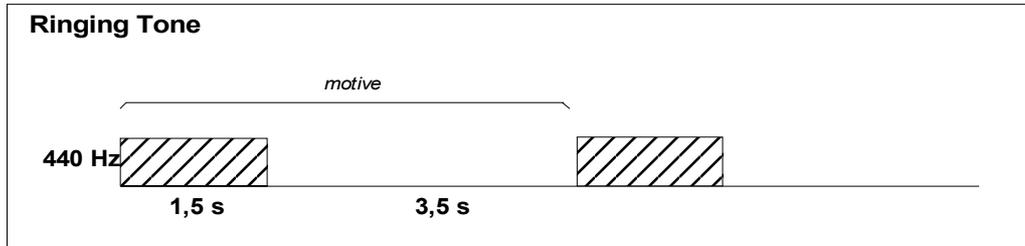


### 3.3 Ringing tone

This tone results from a **440 Hz** frequency pulse cadenced emission.

Characteristics of the repeated motive are:

- Emission duration: **1,5 s +/- 10 %**.
- Pause between two emissions duration: **3,5 s +/- 10 %**.
- Emission level: **- 8 +/- 0,5 dBm0**.



Particular case :

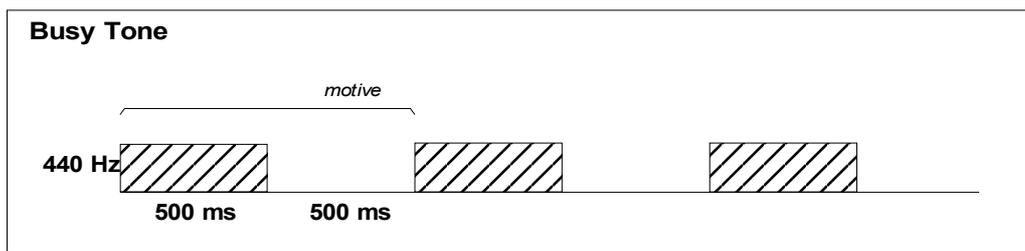
The France Telecom network offers the CRBT (Coloured Ring Back Tone) service to analog lines. The CRBT service enables the served user to replace the ringing tone described above by a specific sound such as a message, a musical clip, a synthesized sound, etc.... he has chosen. Therefore during the call presentation to a subscriber connected to an analog line and using the CRBT service, the calling user may hear such a sound instead of the ringing tone.

### 3.4 Busy tone

This tone results from a **440 Hz** frequency pulse cadenced emission.

Characteristics of the repeated motive are:

- Emission duration: **500 ms +/- 10 %**.
- Pause duration between two emissions: **500 ms +/- 10 %**.
- Emission level for the **440 Hz** frequency: **- 8 +/- 0,5 dBm0**.



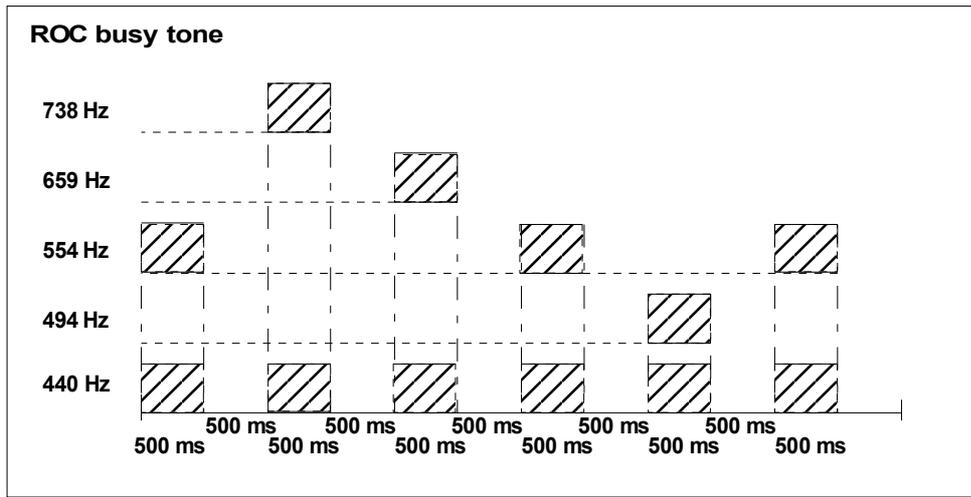
### 3.5 ROC (AutoRappel) busy tone

This tone results from simultaneous and discontinuous emission of a **440 Hz** frequency pulse to which is superposed a motive constituted by the following 6 frequencies: **554 Hz, 738 Hz, 659 Hz, 554 Hz, 494 Hz, 554 Hz** in this order.

The motive may start in a non determined mode from one of the 6 frequencies, the motive lasting always 6 seconds.

Characteristics of the motive are:

- Tone total duration: **6 s +/- 10 %**.
- Emission duration: **500 ms +/- 10 %**.
- Pause duration between two emissions: **500 ms +/- 10 %**.
- Emission level for the 440 Hz frequency: **- 8 +/- 0,5 dBm0**.
- Emission level for the **494 Hz, 554 Hz, 659 Hz and 738 Hz** frequencies: **-16 +/- 0,5 dBm0**.



### 3.6 False call tone

This tone has the same characteristics as the busy tone.

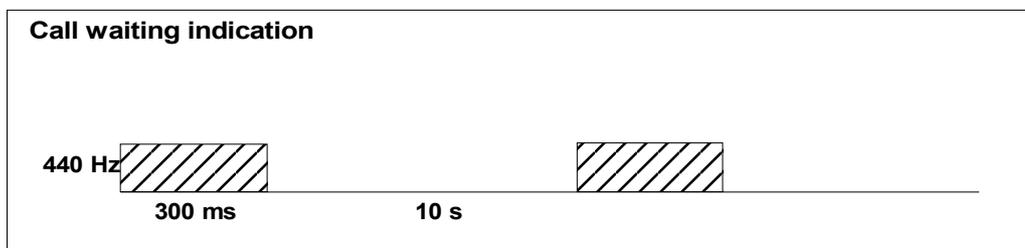
### 3.7 Call waiting (indication to the called party)

This tone results from the emission of a pulse and a pause whose characteristics are:

- Pulse frequency: **440 Hz**.
- Emission duration: **300 ms +/- 50 ms**.
- Emission level: **- 8 +/- 0,5 dBm0**.

This signal is repeated 10 seconds later if the waiting call is still in the same situation at that time.

Moreover, if the subscriber is entitled to Calling line identification presentation service, the calling number presentation procedure is implemented by the first IAI signal.

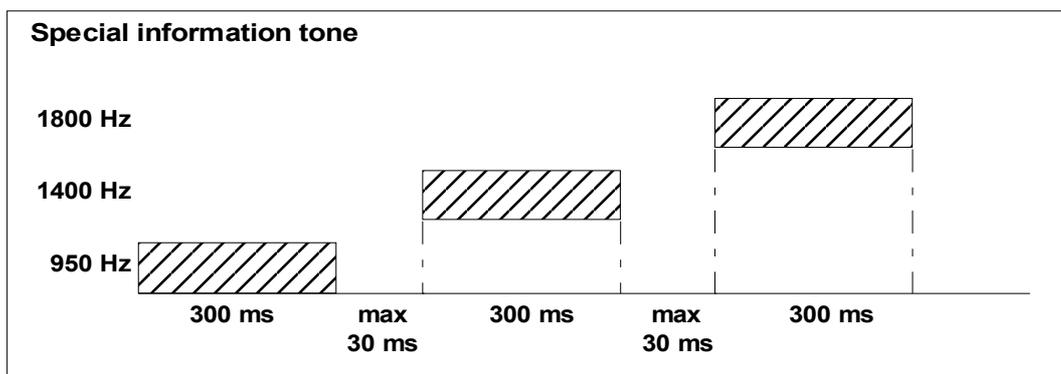


Note: in some systems, the signal may be composed by two 440 Hz pulses lasting 300 +/- 50 ms separated by a pause lasting 400 +/- 50 ms.

### 3.8 Special information tone

This tone comprise one emission time composed of three elementary emissions and a pause time, whose characteristics are:

- Frequencies used for each elementary emissions: **950 Hz**, **1400 Hz**, and **1800 Hz** (transmitted in this order).
- Emission level: **- 8,5 +/- 0,5 dBm0**.
- Emission duration on the three elementary emissions: **300 ms +/- 70 %**.
- Upper limit of the possible gap between the three elementary emissions: **30 ms**.
- Pause between two emissions: **1 s +/- 250 ms**.



## 4. Glossary

IN	Dialling (tone) ( <i>Invitation à Numéroté (tonalité)</i> )
ADM	Message Waiting Indicator, deferred mode ( <i>Avis Différé de dépôt d'un Message</i> )
AIM	Message Waiting Indicator, instant mode ( <i>Avis Immédiat de dépôt d'un Message</i> )
ROC	Completion of calls to busy subscriber ( <i>Rappel automatique sur Occupation</i> )

## 5. History

Edition	Date	Comments
1	March 2000	Initial version
2	July 2000	Update of the ROC tone and editorial corrections
3	October 2000	Editorial corrections
4	May 2005	Update of the section 3.3 in order to take into account the CRBT service