



HUAWEI Module

DTMF Decoder Feature Application Guide

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About This Document

Revision History

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1 Introduction

This document provides references for customers to use Huawei module DTMF (Dual Tone Multiple Frequency) decoder feature. Customers can refer to this document to develop the host application.

Huawei module and the related firmware in the table below support the DTMF decoder feature.

Huawei Module	Firmware Version
MU509-b	12.815.03.01.00 or latter
MU509-b	13.815.07.00.00 or latter
MU509-g	12.815.03.01.00 or latter

**NOTE**

Customers can send AT command "ATI" or "AT+GMR" to the module and get the firmware version number.

1.1 Organization

Chapter	Description
Chapter 1 Introduction	Describes the contents and organization of this document.
Chapter 2 DTMF Decoder Feature	DTMF feature overview and the AT command interfaces.
Chapter 3 Appended Description	Appended description of DTMF decoder.
Chapter 4 Acronyms and Abbreviations	Acronyms and Abbreviations

2 DTMF Decoder Feature

This chapter describes the working flow of Huawei module DTMF decoder feature and the AT command interfaces that can be used by host application.

2.1 Feature Overview

Huawei module DTMF decoder feature includes two parts. One is the feature enabled or disabled configuration, and the other is the DTMF decoder and character unsolicited.

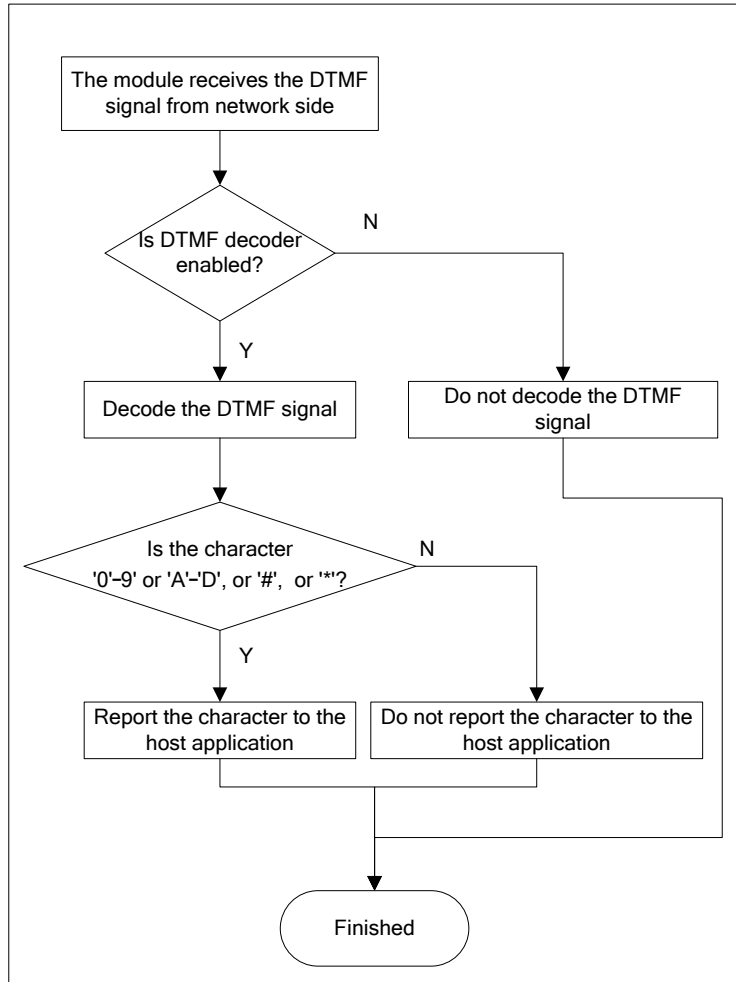
- Support AT command to enable or disable the DTMF decoder.
- Support that decode the DTMF signal to the ASCII character ('0'-'9', 'A'-'D', '*' and '#') and report the character to the host application by unsolicited AT command.

**NOTE**

Weak network condition may cause failed to decode the DTMF signal.

Users can refer to the working flow of Huawei DTMF decoder feature in Figure 2-1 .

Figure 2-1 DTMF decoder working flow



2.2 Feature Configuration

Users can use the AT command "AT^DDTMFCFG" to configure the DTMF decoder feature.

2.2.1 Command Syntax

Command	Possible response(s)
AT^DDTMFCFG=<para>,<value>	<CR><LF>OK<CR><LF> In case of an error: <CR><LF>ERROR<CR><LF>
AT^DDTMFCFG?	<CR><LF>^DDTMFCFG: <para>,<value><CR><LF><CR><LF>OK<CR><LF>

Command	Possible response(s)
^DDTMFCFG=?	<CR><LF>^DDTMFCFG: (list of supported <para>s)<CR><LF><CR><LF>OK<CR><LF>

2.2.2 Interface Description

This command sets parameters related to DTMF decoder. <para> specifies the parameter to be set, and <value> specifies the actual value assigned to <para>. This command enables and disables DTMF decoder only in the RX direction, that is, this command controls whether DTMF signals sent from the network side should be decoded and reported with an ASCII code from the collection of '0'-'9', 'A'-'D', '*' and '#' to the TE.

The set command sets parameters related to DTMF decoder.

The read command queries the current values of parameters related to DTMF decoder.

The test command displays all controllable parameters.

2.2.3 Parameter Description

<para>: an integer specifies parameter related to DTMF decoder.

0: Indicates switch of DTMF decoder in the RX direction.

<value>: an integer specifies parameter value of <para>. It is saved upon power-off and restored to default value upon upgrades.

If <para> is set to 0, the available values for <value> are:

0: Disable DTMF decoder in the RX direction (default value).

1: Enable DTMF decoder in the RX direction.

2.2.4 Example

```
AT^DDTMFCFG=0,1
```

```
OK
```

```
AT^DDTMFCFG?
```

```
^DDTMFCFG: 0,1
```

```
OK
```

```
AT^DDTMFCFG=?
```

```
^DDTMFCFG: (0)
```

```
OK
```




2.3 DTMF Character Report

If the module's DTMF decoder feature is enabled, and the module gets the valid DTMF signal from network side, the module will use the AT command "`^DDTMF`" to report the character to the host application.

2.3.1 Command Syntax

Command	Possible response(s)
	<code><CR><LF>^DDTMF: <key><CR><LF></code>

2.3.2 Interface Description

When the function to decode DTMF signals in the RX direction is enabled, during communication, the DTMF signals sent from the remote subscriber will be decoded into corresponding characters and reported together with an ASCII code from the collection of '0'-'9', 'A'-'D', '*' and '#', in an unsolicited manner, to the TE through this command.

2.3.3 Parameter Description

`<key>`: value type: character; value range: '0'-'9', 'A'-'D', '*' and '#'.

2.3.4 Example

`^DDTMF: 1`

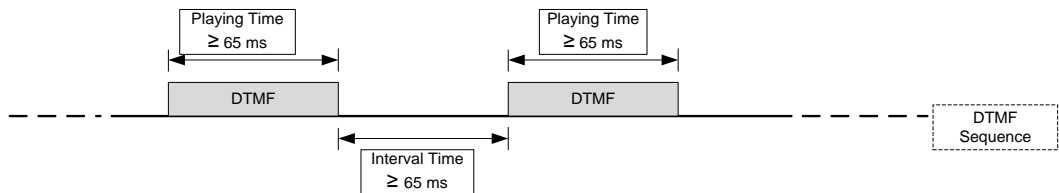
3 Appended Description

This chapter describes constraints to the DTMF signal delivery side. The DTMF signal delivery side should follow the constraints below. Otherwise, the DTMF signal may be failed to be decoded in local side.

The DTMF signal delivery side should build and deliver the DTMF signal following the 3GPP TS 24.008 and 3GPP TS 23.014 documents requirement.

- The DTMF signal delivery side need build the DTMF signal with playing time not less than 65 ms.
- The DTMF signal delivery side should not send the DTMF signal too fast, and the interval between the two DTMF signals should be not less than 65 ms.

Figure 3-1 Constraints for the DTMF signal delivery side





4 Acronyms and Abbreviations

Acronym or Abbreviation	Expansion
ASCII	American Standard Code for Information Interchange
DTMF	Dual Tone Multiple Frequency
RX	Receive
TE	Terminal Equipment