Power Saving Mode Specifications

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1 Scope of this document

This document aims at describing how the power down mode can be activated and deactivated via the RS232 serial link on the WISMO.

2 Introduction

In this document, the term "DTE" refers to the customer device driving the WISMO, which is referred to as the "DCE".

The terms referring to the RS232 signals and levels are used according to recommendations V.24 and V.28. However they are worth remembering:

DTR is the circuit 108/2, TX is the circuit 103, RX is the circuit 102 and CTS is the circuit 106.

The logical level "HIGH or ON" corresponds to the electrical level of 12V, whereas the level "LOW or OFF" corresponds to –12V.

Basically the activation and deactivation is always initiated from the DTE and is carried out through the handshaking of DTR and CTS.

The power down mode can be entered only when the DCE is idle, i.e. when no connection to the network is in progress.
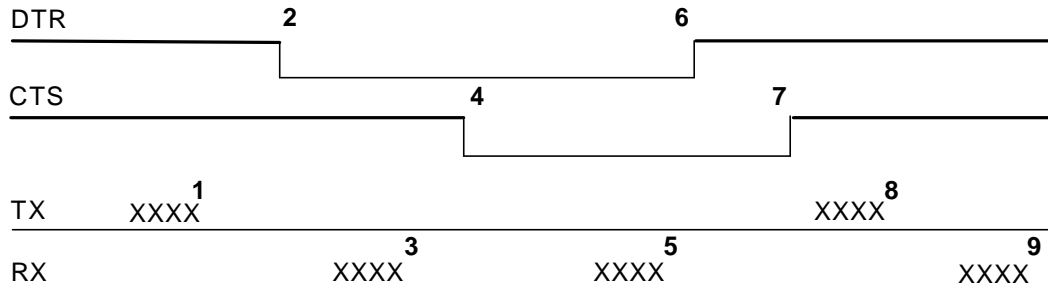
3 Description

Whenever the DTE requests the DCE to enter the power down mode, the DTE drops (ON-to-OFF transition) DTR. From this time on, the DTE **must not send** any more characters on the TX line i.e. even the TX FIFO must be empty.

The DCE acknowledges entry in the power down mode by dropping CTS, which can occur at maximum 5s after the DTR drop. However during that latency period the DTE is prohibited from sending any more AT commands.

AT responses can be sent back to the DTE even if the DCE is in power down mode (actually the DCE exits the power down mode, sends the AT response and enters back the power down mode). Therefore the DTE can drop DTR just after having sent an AT command and before receiving the AT response.

The DCE is made to exit the power down mode by raising the DTR. DCE is not ready to receive further AT commands until it raises in turn CTS, which can take up to 2s from the DTR rise.

Herebelow is a diagram depicting the handshaking:

Description of the stages:

1: the DTE sends an AT command
2: the DTE drops DTR to make the DCE enter the power down mode. Warning: this mode will not really entered until CTS is dropped (stage 4). The DTE could also have dropped DTR after receiving the AT response (stage 3).
3: the DCE sends back the AT response (if any)
4: the DCE drops CTS and does enter the power down mode.
5: the DCE sends back an unsolicited response (for instance a RING or +SMTI (incoming SMS indication))
6: the DTE wants to reply to that unsolicited response so it causes the DCE to exit the power down mode by raising its DTR.
7: in turn the DCE acknowledges the exit of the power donw mode by raising CTS.
8) & **9**) exchange of AT commands/responses.

Note 1): The DTE must not send any AT commands from stage 2 on up to stage 7.

Note 2): During the latency period (between stages 2 and 4) should the DTE want to abort the power down mode, it raises DTR and should wait for 150us before assessing CTS. If CTS is still high than the DCE has aborted the power down mode and is ready to receive AT commands.
The 150us wait should get around the race condition between DTR raise and CTS drop.