



Lucent Technologies MTC AT Voice Command Set

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This document specifies Lucent Technologies
Microelectronics Group AT Voice Command Set.

The commands listed all conform to the TIA Interim
Standard IS-101 *Asynchronous Voice DCE Control
Standard*.

AT Voice Command Set

The AT Voice Command set follows a modified IS-101 architecture. The commands are sent through the comm port, but the data path is sent either through the comm port or through a DMA channel using the wave driver. Tables 1 and 2 show a summary of the AT Voice Command Set.

Summary of the AT Voice Command Set

Table 1. The AT Voice Command Set

Voice Commands	
Command	Description
AT+FCLASS=8	Enter voice mode
AT+VIP	Initialize voice parameters
AT+VCID	Caller ID
AT+VDR	Distinctive ring
AT+VGT	Speaker volume control
AT+FMI?	Report manufacturer ID
AT+FMM?	Report product model information
AT+FMR?	Report product revision level
AT+VIT	DTE/DCE inactivity timer
AT+VNH	Automatic hang-up control
AT+VTD	Set beep tone duration timer
AT+VLS	Analog source/destination selection and DTMF/tone reporting
AT+VSD	Set silence detection timer
AT+VRA	Set ringback goes away timer
AT+VRN	Set ringback never came timer
AT+VTS	DTMF/tone generation
AT+VTX	Enter voice transmit state
AT+VRX	Enter voice receive state
AT+VSM	Voice compression method
AT+VEM	Event reporting and masking
AT+VGR	Receive gain selection
AT+VPR	Select DTE/DCE interface rate
AT+VSP	Speakerphone ON/OFF
AT+VGM	Microphone Gain
AT+VGS	Speaker Gain

Table 2. The AT Voice Command Set Not Defined In IS-101 Specification

Command	Description
ATS32	Synthetic ring volume
ATS33	Synthesized ring frequency

AT Voice Commands Reference

General AT Voice Commands

AT+FCLASS=8 Enter Voice Mode

The command AT+FCLASS=8 puts the modem in voice mode. Speakerphone and TAD modes are subsumed under the more general heading of voice mode, and use a particular subset of voice mode commands to implement their respective features and functions.

The modem controller will maintain the overall state of the system so as to know when voice commands are issued in the context of using the speakerphone versus TAD or other voice contexts.

- AT+FCLASS? Returns the current DCE mode
- AT+FCLASS=? Queries the DCE for the range of modes supported
DCE returns: 0, 1, 8, 80 (data, FAX, voice, VoiceView)

AT+VIP Initialize Voice Parameters

The command AT+VIP causes the modem to initialize all the voice parameters to their default values. The command has no effect on the +FCLASS setting.

AT+VCID=<pmode> Caller ID

With this command caller identification is enabled/disabled.

- Disable caller ID: <pmode>=0
- Enable, formatted caller report: <pmode>=1
- Enable, unformatted caller report: <pmode>=2
- AT+VCID? Returns the current caller ID pmode
- AT+VCID=? Queries the DCE for the range of supported caller ID report formats
DCE returns: 0, 1, 2

AT+VDR=<enable>,<report> Distinctive Ringing & Cadence Report

This command will enable the distinctive ringing feature. This will allow a report of DROF/DRON to follow an exact ring cadence coming over the phone line.

- AT+VDR? Returns the current values of <enable> and <report>
- AT+VDR=? Queries the DCE for the range of supported distinctive ring configurations
DCE returns: (0, 1), (0—255)

AT+VGT=<level> Speaker Volume Control

This command will enable the speaker volume control.

- <level> is 0—255
- <level>=128: Nominal volume level for sending to speaker
- <level>=<value greater than 128>: Increase volume above nominal level
- <level>=<value less than 128>: Decrease volume below nominal level

AT+VGT? Returns current value

AT+VGT=? Returns range of supported values

AT Voice Commands Reference (continued)

AT+VGR=<gain> Receive Gain Selection

This command will enable the receive microphone gain control.

- <gain> is 0—255: the only useful range is 121—134
- <gain>=128: nominal level for receive gain from microphone
- <gain>=<value greater than 128>: increase gain above nominal level
- <gain>=<value less than 128>: decrease gain below nominal level

TAD mode—This command may be used in TAD local recording to control the recording level from the microphone.

Speakerphone mode—This command may be used to control the gain to the remote caller.

AT+VGR? Returns current value of receive gain

AT+VGR=? Returns range of supported gain values

AT+VEM=<mask> Event Reporting and Masking

The DTE can use this command to disable an event report regardless of the DCE state, or of the analog signal source or destination configuration. Mask is Bits 0—33 (i.e., FFFFFFFFC). See the IS-101 specification for defined bit values.

- AT+VEM? Returns the current values of the mask
- AT+VEM=? Queries the DCE for the range of supported service level events

AT+FMI?, AT+FMM?, AT+FMR DCE Identification Commands

This command will enable DCE identification.

- +FMI? = Report manufacturer ID
- +FMM? = Report product identification (model)
- +FMR? = Report version or revision level

AT+VIT = <Timer> DTE/DCE Inactivity Timer

This command sets the DCE's value for the DTE/DCE inactivity timer. The units are in one seconds.

- AT+VIT? Returns the current value of the timer
- AT+VIT=? Queries the DCE for the range of supported values

AT+VNH = <Hook> Automatic Hang-up Control

This command causes the DCE to enable or disable automatic hangups in the data and facsimile modes. See the ISO-101 specification for the detailed description of this command and its interaction with the +FCLASS and ATH commands.

- <hook> = 0 The DCE retains automatic hangups (which is the way in the other non-voice modes).
- <hook> = 2 The DCE disables automatic hangups in the other non-voice modes. The DTE only performs a logical hangup (returns the "OK" result code).

AT+VNH? Returns the current value

AT+VNH=? Returns the supported values

AT Voice Commands Reference (continued)

AT Commands Related to Speakerphone Operation

AT+VLS=<label> Analog Source/Destination Selection

This is a general purpose analog source/destination command that attaches various analog devices to the system in voice mode.

- *Speakerphone on:* AT+VLS=7.
Attach internal speaker and internal microphone, DCE off-hook.
- *Speakerphone off:* AT+VLS=0.
Detach analog devices, DCE on-hook.
- *Microphone Control/Phone Muting:*
AT+VLS=5 disables/detaches microphone analog source (leaving speaker only) when speakerphone is in operation (phone mute feature).
AT+VLS=7 restores/attaches microphone along with speaker (normal speakerphone operation).
- AT+VLS? reports the current analog source/destination configuration, along with a listing of all event codes reported from the modem to the DTE under that configuration.
- AT+VLS=? queries the DCE for the range of supported configurations and the list of unsolicited event codes that the modem will report to the DTE under each configuration. For speakerphone, the configurations supported are 0, 5, and 7—as explained above.

AT Voice Command Set Related to Telephone Answering Device

AT+VTD=<dur> Beep Tone Duration Timer

This command sets the default duration for DTMF/tone generation in 0.01 s increments.

For DTMF digits, beep tone duration is the interdigit time. For tone generation, this number is the actual tone duration.

AT+VTD? Returns the current value

AT+VTD=? Returns the supported values

AT+VTS=<string> DTMF and Tone Generation in Voice Mode

This command will cause the modem to produce a sequence of DTMF tones (or other tones, such as dial tone, busy, silence, etc.) as specified in the string parameter. Specifications for the format of tone strings are detailed in IS-101.

- AT+VTS=? reports the range of frequencies supported for tone generation, as well as tone duration.
Example: (300—3000), (300—3000), (0—400).

AT Voice Commands Reference (continued)

AT+VLS=? Analog Source/Destination Selection and DTMF/Tone Reporting

Requests for the modem's DTMF/Tone reporting capabilities are made using this command. For each system configuration in voice mode (i.e., speakerphone and answering machine), the modem reports the capabilities that are enabled for the configuration.

Also, for each configuration, the modem indicates tone-reporting capabilities for each of the three different voice states: voice transmit data, voice receive data, and voice command state (voice idle).

TAD supports each of the following IS-101 analog source/destination configurations:

<u>Label #</u>	<u>Description</u>
0	DCE on-hook, local phone connected to Telco.
1	DCE off-hook, DCE connected to Telco.
2	DCE off-hook, local phone connected to DCE.
3	DCE off-hook, local phone connected to Telco, DCE to local phone.
4	Speaker connected to DCE, DCE on-hook (playback messages)
5	Speaker connected to DCE, DCE off-hook (call screening)
6	Microphone connected to DCE, DCE on-hook (record greeting)
7	Microphone and speaker connected, DCE off-hook (speakerphone)

AT+VSD=<sds, sdi> Silence Detection (QUIET and SILENCE)

This command sets both the ***silence detection sensitivity*** (<sds>) and ***silence detection interval*** (<sdi>).

- Larger values of <sds> indicate that the modem is to treat noisier line conditions as silence.
 - <sds> = 128 ; Nominal level of sensitivity; -40 dBm (default) .
 - <sds> > 128 ; More aggressive ; <sds>=129 is -39 dBm.
 - <sds> < 128 ; Less aggressive; <sds>=127 is -41 dBm.
- The <sdi> specifies the amount of time the modem shall wait before reporting silence to the DTE. It is used for determining :

Presumed hang-up (SILENCE), after which the modem sends <DLE>-s to DTE.

Default is 5 seconds.

AT+VSD? Returns the current value

AT+VSD=? Returns the supported values

AT+VTX Enter Voice Transmit Data State

Using this command will cause the modem to begin the voice transmission process with the voice stream sent through the comm port. Applications using the wave interface do not use the AT+VTX command.

There are two ways for the DCE to leave voice transmit state:

1. Modem receives <DLE> - <ETX> in voice stream.
2. DTE/DCE inactivity timer expires.

AT Voice Commands Reference (continued)

AT+VRX Enter Voice Receive Data State

Using this command enables the modem to begin voice receive state with the voice stream received through the comm port. Applications using the wave interface do not use the AT+VRX command. The modem returns the CONNECT result code to the DTE.

The DCE leaves voice receive state when:

1. Modem receives <DLE> - ! from the DTE.
2. Upon expiration of the silence detection timer, the modem passes <DLE> shielded event codes indicating presumed hang-up (<DLE>-s), or presumed end-of-message (<DLE>-q).

AT+VSM=<cml>,<vsr> Compression Method and Sampling Rate Specifications

This command enables the compression method and sampling specifications where cml = compression method label and vsr = voice sampling rate.

- AT+VSM? returns the numeric and string labels of the compression method currently in use, and the sampling rate currently in use.
- AT+VSM=? reports the voice compression methods supported by the DCE, and the voice sampling rates at which they are supported: The default is 129,8000 (16-bit linear, 8.0 kHz)
 - 128, 8-bit linear, (7200, 8000, 11025)
 - 129, 16-bit linear, (7200, 8000, 11025)
 - 130, 8-bit A-law, (8000)
 - 131, 8-bit μ -law, (8000)
 - 132, IMA ADPCM, (8000)

AT+VRA=<interval> Ringback Goes Away Timer

The modem uses the ringback goes away timer when originating a call.

This command sets this timer to the amount of time the modem shall wait between ringbacks before assuming that the remote station has gone off-hook.

AT+VRA? Returns the current value.

AT+VRA=? Returns the range of supported values.

AT+VRN=<interval> Ringback Never Appeared Timer

The modem uses the ringback never appeared timer when originating a call.

The AT+VRN command sets this timer to the amount of time that the modem shall spend looking for an initial ringback. If ringback is not detected within this interval, the modem shall assume that the remote station has gone off-hook.

AT+VRN? Returns the current value.

AT+VRN=? Returns the supported values.

AT Voice Commands Reference (continued)

AT+VPR=<rate> Select DTE/DCE Interface Rate

The AT+VPR command returns an OK for any rate but has no action.

Events Reported to the DTE :

The modem will return OK when going off-hook in voice mode (+FCLASS=8). After answering in voice mode, the modem may send any of the following <DLE> shielded event codes to the DTE, as appropriate:

<DLE> Shielded Codes Sent from DCE to DTE

<u>Code Character</u>	<u>Description</u>
0—9, A—D, #, *	DTMF tones
a	Answer tone
b	Busy tone
c	Fax calling tone
d	Dial tone
e	Data calling tone
h	Local phone on-hook
H	Local phone off-hook
R	Ring
s	Silence timer has expired
<ETX>	End of voice data transmission
@	CAS tone detected

<DLE> Codes Sent to DCE:

For simple actions in voice mode, the modem may send any of the following <DLE> shielded event codes (in ASCII) to the DTE, as appropriate:

<DLE> Shielded Codes Sent from DTE to DCE

<u>Code Character</u>	<u>Description</u>
u	Bump up the volume by 1 dB
d	Bump down the volume by 1 dB
<ETX>	End of voice data transmission
!	End receive data state

AT+VSP=<mode> Speakerphone ON/OFF (+VSP)

	Default	Mandatory
<mode>	0 = Off	0 or 1

This command turns the Speakerphone function ON (mode =1) or OFF (mode = 0)

AT+VGM=<gain> Microphone Gain (+VGM)

	Default	Mandatory
<gain>	Manufacturer Specific	0 - 255

This command sets the microphone gain of the Speakerphone function. <gain> is an unsigned octet where values greater than 128 indicate a gain larger than nominal and values smaller than 128 indicate a gain smaller than nominal.

AT Voice Commands Reference (continued)

AT+VGS=<gain> Speaker Gain (+VGS)

	Default	Mandatory
<gain>	Manufacturer Specific	0 - 255

This command sets the speaker gain of the Speakerphone function. <gain> is an unsigned octet where values greater than 128 indicate a gain larger than nominal and values smaller than 128 indicate a gain smaller than nominal.

AT Voice Command Set Not Defined In IS-101 Specifications

S32 Synthetic Ring Volume

This command will provide a synthetic ring volume in dB with an implied minus sign. The default = 10.

S33 Synthetic Ring Frequency

This command will provide a synthetic ring frequency. The valid values are 0—5, with 0 = disabled and 1—5 = five varying ring frequencies. The default = 0.

AT+VTS=!

This does a flash hook.

AT Voice Commands Reference (continued)

Examples

The application issues AT commands to request actions by the modem, and the modem responds with standard TIA-602 result codes to tell the application that the requested action has been completed.

Notes for Speakerphone Examples

1. If the user decides to pick up his **local** (parallel) phone while in the middle of a speakerphone call, the DCE will sense the transition and send the application a **<DLE>-H** sequence. The application—which should always be screening for DLE-shielded codes in the background when the modem is in the voice mode—can then respond to the **<DLE>-H** (for example, by resetting speakerphone buttons or doing whatever else needs to be done with the speakerphone interface).

2. **DLE-shielded codes** that the modem will send to the application while in speakerphone mode are:

<u>Command</u>	<u>Description</u>
DLE - c	FAX calling tone detect.
DLE - e	Data calling tone detect.
DLE - h	Local phone went on-hook (hung up).
DLE - H	Local phone went off-hook (picked up).

3. When the user is in the middle of a speakerphone call, **call waiting** (hold operation) can be initiated when the user hears the call-waiting signal through the speaker. Call waiting entails the following communication between the application and the modem.

<u>Command</u>	<u>Description</u>
ATD!	Put the current call on hold, and answer the new incoming call.
OK	DCE responds. Original call is on hold, and the speakerphone user is connected to the second call.

To terminate the second call and return to the first, the application should again send the modem the ATD! command.

ATD!	Terminate the second call and return to the original call.
OK	DCE responds. Second call is terminated and the user is again connected to the original call.

AT Voice Commands Reference (continued)

Example # 1: Initiating a speakerphone call (with phone muting during conversation)

The speakerphone application is loaded. The modem is initially idle, in data mode. The user then decides to pick up the phone to place a speakerphone call. Picking up the phone should initiate the following chain of events.

<u>Command</u>	<u>Description</u>
AT+FCLASS=8	The modem enters voice mode.
OK	DCE responds. Now in voice mode.
AT+VGT=128	Set speaker volume to normal level.
OK	DCE responds. Volume level is set.
AT+VLS=7	Attach internal speaker and microphone, DCE off-hook.
OK	DCE responds. Now in speakerphone mode. Phone off hook, dial tone audible, speaker and microphone ready to use.
ATD5551234	Provide dial string for DCE to place the call.
OK	DCE responds. Number is dialed.

Call is placed through phone network. Caller can hear ringback or busy signal from the phone being called. If the person at the other end picks up the phone, caller and callee converse. If the speakerphone user decides to **mute** his speakerphone, the application sends the following to mute the speakerphone.

<u>Command</u>	<u>Description</u>
AT+VLS=5	Enter Mute Mode . Mic is disconnected from the line, leaving the speaker only.
OK	DCE responds. The mic is no longer connected to the line, and the speakerphone is mute.

After a while, the speakerphone user decides to turn the mic back on (**mute off**). This is done when the application issues the following command.

<u>Command</u>	<u>Description</u>
AT+VLS=7	No Mute . Microphone is reattached to system along with speaker.
OK	DCE responds. Speakerphone with both mic and speaker is operational.

Conversation ends, and user hangs up.

<u>Command</u>	<u>Description</u>
ATH	Application tells the modem to terminate the call with standard AT command.
OK	DCE responds.

Speakerphone is now on-hook. The speaker and mic have been detached from the system, and the modem is now in data mode (+FCLASS=0).

AT Voice Commands Reference (continued)

Example # 2: Initiating a stored number speakerphone call

The speakerphone application is loaded. The modem is initially idle, in data mode. The user then decides to place a speakerphone call either by entering the number without going off-hook first or selecting a number previously stored in the application. When the user tells the application to dial, the following events occur:

<u>Command</u>	<u>Description</u>
ATD5551234;	Provide a dial string appended with a semicolon (;) for the DCE to place the call and go to command mode.
OK	The DCE responds, and the number is dialed.

The call is placed through the phone network in data mode. The modem stays in command mode, and the application should wait for the OK before sending next command.

<u>Command</u>	<u>Description</u>
AT+FCLASS=8	Put the modem into voice mode.
OK	DCE responds: The modem is now in voice mode.
AT+VGT=128	Set the speaker volume to normal level.
OK	DCE responds: The volume level is set.
AT+VLS=7	Start the speakerphone by attaching the internal speaker and mic to the line; DCE off-hook.
OK	DCE responds: Speakerphone mode is active. The phone is off hook; dial tone is audible, and the speaker and mic are ready to use.

The caller can hear ringback or busy signal from the phone being called. If the person at the other end picks up, the caller and callee converse.

The conversation ends, and the speakerphone user hangs up.

<u>Command</u>	<u>Description</u>
ATH	The application tells the modem to terminate the call with a standard AT command.
OK	DCE responds: The speakerphone is now on-hook. The speaker and microphone have been detached from the system, and the modem is now in data mode (+FCLASS = 0).

AT Voice Commands Reference (continued)

Example # 3: Answering a speakerphone call

The speakerphone application is loaded. The modem is initially idle, in data mode. In this mode, the modem is always screening for incoming calls.

<u>Command</u>	<u>Description</u>
RING	DCE reports ringing from remote station. The user decides to pick-up the phone, which should initiate the following:
AT+FCLASS=8	Modem enters voice mode.
OK	DCE responds. Now in voice mode.
AT+VGT=128	Speaker volume set to normal.
OK	DCE responds. Volume level is set.
AT+VLS=7	Call is answered: Attach internal speaker and microphone to the line, DCE off-hook.
OK	DCE responds. Now in speakerphone mode, connected to the line (call is answered).

Speakerphone user picks up the phone and hears the caller from the other end. Conversation continues for awhile. When it ends, the speakerphone user hangs up.

<u>Command</u>	<u>Description</u>
ATH	DTE issues standard command to terminate call.
OK	DCE responds. Speakerphone goes on-hook. Speaker and microphone are detached from system, and modem returns to data mode (+FCLASS=0).

Note 1: When the local phone goes off-hook in the middle of a speakerphone call, the speakerphone disconnects, and the DCE returns <DLE>-H to the DTE.

Note 2: When the speakerphone is on, *call waiting* (hold operation) is initiated by:

<u>Command</u>	<u>Description</u>
ATD!	DTE sends hold command to DCE.
OK	DCE responds.

AT Voice Commands Reference (continued)

Example # 4: Receiving an incoming FAX call in speakerphone or TAD mode and switching to FAX mode

In this example, the sequence begins at the point of the user or telephone answering device (TAD) taking the speakerphone off-hook and detecting a FAX calling tone from the other end.

<u>Command</u>	<u>Description</u>
<DLE>-c	DCE detects FAX calling tone from the remote FAX and informs the application by sending DLE-c sequence.
AT+FCLASS=1	Application switches modem out of voice mode, and into FAX mode.
OK	DCE responds. Now in FAX mode, still off-hook and connected to incoming call.
ATA	Application instructs modem to answer FAX call using standard AT commands.
OK	DCE responds. The call is answered, and modem continues with procedures to establish connection and receive FAX transmission. The application software will then take care of disconnecting the call when the FAX is done, and returns to data mode (+FCLASS=0).

Example # 5: Receiving an incoming data call in speakerphone or TAD mode and switching to data mode

In this example, the sequence begins at the point of the user or telephone answering device (TAD) taking the speakerphone off-hook and detecting a data calling tone from the other end.

<u>Command</u>	<u>Description</u>
<DLE>-e	DCE detects data calling tone from the remote modem and informs the application by sending DLE-e sequence.
AT+FCLASS=0	Application switches modem out of voice mode, and into data mode.
OK	DCE responds. Now in data mode, still off-hook and connected to incoming call.
ATA	Application instructs modem to answer data call using standard AT commands.
CONNECT	DCE responds. The call is answered, and modem continues with procedures to establish connection.

AT Voice Commands Reference (continued)

Example # 6: Switching from speakerphone mode to TAD mode

In this example, the sequence begins at the point of the user in speakerphone mode and at some point in time wants to put the other end in hold. The application may switch to TAD mode in hold state and play some music wave file to the line.

<u>Command</u>	<u>Description</u>
AT+VLS=1	Applications switches modem out of speakerphone mode and into TAD mode.
OK	DCE responds. Now in TAD mode.
AT+VTX	DTE selects voice transmit mode.
CONNECT	DCE responds.
<Data>	DTE plays music through modem to remote caller.
<DLE><ETX>	DTE indicates end of voice transmit data.
OK	DCE acknowledges switch back to voice command state.

The Application may switch back to speakerphone mode by following the example to switch from TAD mode to speakerphone mode.

Example # 7: Call screening & recording a message using TAD - IS101 <dle> shielded method.

The TAD application is loaded. The modem is initially idle, in data mode (+FCLASS=0).

<u>Command</u>	<u>Description</u>
RING	DCE reports ringing from remote station.
AT+FCLASS=8	The modem enters voice mode.
OK	DCE responds.
AT+VGT=128	Set speaker volume to normal.
OK	DCE responds.
AT+VSM=132,8000	DTE selects IMA ADPCM with 8.0 kHz sampling rate.
OK	DCE responds.
AT+VSD=128,0	DTE selects normal silence detection sensitivity, and a silence detection interval of 0 seconds. Disable silence detection.
OK	DCE responds.
<DLE>-R	DCE detects another ring, and notifies DTE.
AT+VLS=1	The modem answers the call.
OK	DCE is off-hook.

AT Voice Commands Reference (continued)

The TAD next plays its greeting message, issues a beep, and records the caller's message.

<u>Command</u>	<u>Description</u>
AT+VTX	DTE selects voice transmit mode.
CONNECT	DCE responds.
<Data>	DTE plays greeting through modem to remote caller.
<DLE><ETX>	DTE indicates end of voice transmit data.
OK	DCE acknowledges switch back to voice command state.
AT+VTS=[933,0,120]	DTE annotates greeting message with a 1.2 second beep.
OK	DCE responds.
AT+VSD=128,50	DTE selects normal silence detection sensitivity and a silence detection interval of 5 seconds. Enable silence detection.
OK	DEC responds.
AT+VLS=5	The speaker is attached to the system, and the modem is off-hook.
OK	DCE is off-hook.
AT+VRX	DTE selects voice receive mode.
CONNECT	DCE agrees.
<Data>	DCE delivers <DLE> shielded voice message to DTE.

The caller leaves a message, and hangs up. The modem detects silence for a specified period of time, and then notifies the DTE that the message being recorded has ended.

<u>Command</u>	<u>Description</u>
<DLE>-s	DCE issues presumed end of message after silence detection interval has elapsed.
<DLE>-!	DTE signals end of voice receive state.
<DLE><ETX>	DCE ends voice transmission to DTR, with this code, and returns back to voice command state.
ATH	DTE issues standard command to terminate call. Speakerphone goes on-hook, speaker and microphone are detached from system, and modem returns to data mode (+FCLASS=0).
OK	DCE responds.

AT Voice Commands Reference (continued)

Example # 8: Call screening & recording a message with TAD—using the wave driver to transmit and receive voice samples

The TAD application is loaded. The modem is initially idle, in data mode (+FCLASS=0).

<u>Command</u>	<u>Description</u>
RING	DCE reports ringing from remote station.
AT+FCLASS=8	The modem enters voice mode.
OK	DCE responds.
AT+VGT=128	Set speaker volume to normal.
OK	DCE responds.
AT+VSD=128,0	DTE selects normal silence detection sensitivity, and a silence detection interval of 0 seconds. Disable silence detection.
OK	DCE responds.
AT+VSM=129,8000	DTE selects 16-bit linear voice compression with 8.0 kHz sampling rate.
OK	DCE responds.
<DLE>-R	DCE detects another ring, and notifies DTE.
AT+VLS=1	The modem answers call.
OK	DCE is off-hook

The TAD next plays its greeting message, issues a beep, and records the caller's message.

The Application may transmit voice samples using the wave driver. The application may issue WAVE_OUT_OPEN and WAVE_OUT_WRITE messages to the wave driver.

At the end of the greeting message the application may issue the WAVE_OUT_STOP message to the wave driver.

AT+VTS=[933,0,120]	DTE annotates greeting message with a 1.2 second beep.
OK	DCE responds.

The Application may receive voice samples using the wave driver. The application may issue WAVE_IN_OPEN and WAVE_IN_START messages to the wave driver.

AT+VSD=128,50	DTE selects normal silence detection sensitivity and a silence detection interval of 5 seconds. Enable silence detection.
OK	DCE responds.
AT+VLS=5	Speaker is attached to system, and modem is off-hook.
OK	DCE is off-hook

AT Voice Commands Reference (continued)

The caller leaves a message, and hangs up. The modem detects silence for a specified period of time,
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and
then notifies the DTE.

<DLE>-s DCE issues
presumed end of message after silence detection

interval has

elapsed.

At the end of the message the application may issue the WAVE_IN_STOP message to the wave driver.

ATH DTE issues standard command to terminate call. DCE goes on-hook, speaker and microphone are detached from system, and modem returns to data mode (+FCLASS=0).

OK

DCE responds.

NOTES:

For additional information, contact your Microelectronics Group Account Manager or the following:

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