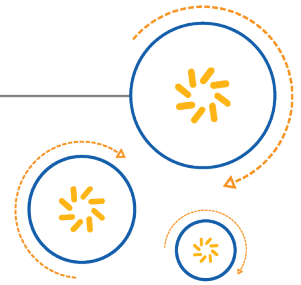




Qualcomm Technologies, Inc.



## QMI CSD 1.12 for APSS

QMI Core Sound Driver Svc Spec

80-NB227-25 E

August 4, 2015

QUALCOMM®  
2016-05-16 00:15:01 PDT  
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# Revision History

Revision	Date	Description
A	Jun 2012	<p>Initial release. Created from 80-VB816-25 C.</p> <p>Updates for this revision include minor version 3.</p> <p>Added the following information to TLV tables:</p> <ul style="list-style-type: none"> <li>• Version first introduced</li> <li>• Field type</li> </ul> <p>Updated Section 3.31.1 and Section 3.49.1.</p> <p>Added new TLV:</p> <ul style="list-style-type: none"> <li>• Get UI Param Size (QMI_CSD_IOCTL_VC_CMD_GET_UI_PROPERTY_REQ and QMI_CSD_IOCTL_VS_CMD_GET_UI_PROPERTY_REQ)</li> </ul> <p>Added QMI_CSD message:</p> <ul style="list-style-type: none"> <li>• QMI_CSD_IOCTL_VM_CMD_STANDBY_VOICE</li> </ul>
B	Jan 2013	<p>Updates for this revision include minor version 4 through minor version 6.</p> <p>Added new TLV Extended Devices (Sections 3.10.1 and 3.11.1)</p>
C	Mar 2013	<p>Updates for this revision include minor version 7.</p> <p>Added new QMI_CSD messages:</p> <ul style="list-style-type: none"> <li>• QMI_CSD_IOCTL_DEV_CMD_AANC_CONTROL (Section 3.133)</li> <li>• QMI_CSD_IOCTL_VM_CMD_PAUSE_VOICE (Section 3.134)</li> </ul>
D	Feb 2015	<p>Updates for this revision include minor version 8 through minor version 10.</p> <p>Added new QMI_CSD messages:</p> <ul style="list-style-type: none"> <li>• QMI_CSD_IOCTL_DEV_CMD_RESTART (Section 3.138)</li> <li>• QMI_CSD_IOCTL_VC_CMD_SET_CAL_FEATURE_ID (Section 3.139)</li> <li>• QMI_CSD_IOCTL_VM_CMD_SET_HDVOICE_MODE (Section 3.140)</li> </ul>
E	Aug 2015	<p>Updates for this revision include minor version 11 and minor version 12.</p> <p>Added new messages:</p> <ul style="list-style-type: none"> <li>• QMI_CSD_VOICE_CONFIG (Section 3.141)</li> <li>• QMI_CSD_VOICE_START (Section 3.142)</li> <li>• QMI_CSD_VOICE_END (Section 3.143)</li> <li>• QMI_CSD_VOICE_DEVICE_SWITCH (Section 3.144)</li> <li>• QMI_CSD_AFE_LOOPBACK (Section 3.145)</li> <li>• QMI_CSD_VOICE_VOLUME_CONTROL (Section 3.146)</li> <li>• QMI_CSD_VOICE_MUTE (Section 3.147)</li> <li>• QMI_CSD_DTMF_GENERATION (Section 3.148)</li> <li>• QMI_CSD_VOICE_DTMF_GENERATION_ENDED_IND (Section 3.149)</li> <li>• QMI_CSD_VOICE_DTMF_DETECTION (Section 3.150)</li> <li>• QMI_CSD_VOICE_DTMF_DETECTED_IND (Section 3.151)</li> <li>• QMI_CSD_SET_VOICE_FEATURE (Section 3.152)</li> <li>• QMI_CSD_VOICE_RECORD_START (Section 3.153)</li> <li>• QMI_CSD_VOICE_RECORD_END (Section 3.154)</li> <li>• QMI_CSD_VOICE_PLAYBACK_START (Section 3.155)</li> <li>• QMI_CSD_VOICE_PLAYBACK_END (Section 3.156)</li> </ul>

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# 1 Introduction

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## 1.1 Purpose

This specification documents Major Version 1 of the Qualcomm Messaging Interface for the Core Sound Driver (QMI\_CSD).

QMI\_CSD provides commands related to the Core Sound Driver service to applications running on a host PC:

- CSD Init
- CSD Deinit
- CSD Open
- CSD Close
- CSD IOCTL
- CSD Query Driver Version

User-level applications are to use QMI\_CSD to access the Core Sound Driver functionality on the MSM™ device.

The QMI\_CSD service provides Core Sound Driver service to its control points. These services include interfaces to control CSD initialization, deinitialization, open, close, and sound driver-related controls.

CSD Init must be called before the CSD can provide any service.

## 1.2 Scope

This document is intended for development use by the clients who intend to use the QMI\_CSD API on the device using the QMI interface.

This document provides the following details about the QMI\_CSD API.

- Chapter 2 provides the theory of operation for the QMI\_CSD. This chapter includes messaging conventions, assigned QMI service type, fundamental service concepts, and state variables related to the service.
- Chapter 3 provides the specific syntax and semantics of messages included in this version of the QMI\_CSD specification.
- Appendix A through Appendix K provide information on status codes, media and network IDs, ratio equation, format types and frame formats, band modes, sampling frequency index, channel bitfields, and multiple-channel configurations.

## 1.3 Conventions

Function declarations, function names, type declarations, and code samples appear in a different font, for example, `#include`.

## 1.4 Technical Assistance

For assistance or clarification on information in this document, submit a case to Qualcomm Technologies at <https://support.cdmatech.com>.

If you do not have access to the CDMATech Support website, register for access or send email to [support.cdmatech@qti.qualcomm.com](mailto:support.cdmatech@qti.qualcomm.com).

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## 2 Theory of Operation

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### 2.1 Generalized QMI Service Compliance

The QMI\_CSD service complies with the generalized QMI service specification, including the rules for messages, indications and responses, byte ordering, arbitration, constants, result, and error code values described in 80-VB816-1. Extensions to the generalized QMI service theory of operation are noted in subsequent sections of this chapter.

### 2.2 CSD Service Type

CSD is assigned QMI service type 0x14.

### 2.3 Message Definition Template

#### 2.3.1 Response Message Result TLV

This Type-Length-Value (TLV) is present in all Response messages defined in this document. It is not present in the Indication messages.

Name	Version introduced	Version last modified
Result Code	Corresponding command's <i>Version introduced</i>	N/A

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x02			1	Result Code
Length	4			2	
Value	→	uint16	qmi_result	2	Result code <ul style="list-style-type: none"><li>• QMI_RESULT_SUCCESS</li><li>• QMI_RESULT_FAILURE</li></ul>
		uint16	qmi_error	2	Error code – Possible error code values are described in the error codes section of each message definition

## 2.4 QMI\_CSD Fundamental Concepts

### 2.4.1 CSD Overview

The CSD module provides the QMI interface on top of the already existing CSD public API. Refer to [80-VB816-1](#) for the QMI functional overview, and [80-N4404-1](#) for the CSD functional overview.

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### 3 QMI\_CSD Messages

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**Table 3-1 QMI\_CSD messages**

Command	ID	Description
QMI_CSD_QUERY_DRIVER_VERSION	0x0020	Queries the CSD version number.
QMI_CSD_INIT	0x0021	Initializes the CSD before the CSD can provide any functionality.
QMI_CSD_DEINIT	0x0022	Detaches the client from the CSD.
QMI_CSD_OPEN_PASSIVE_CONTROL_VOICE_STREAM	0x0023	Opens a passive control Voice Stream (VS) and returns the corresponding VS handle.
QMI_CSD_OPEN_FULL_CONTROL_VOICE_STREAM	0x0024	Opens a full control VS and returns the corresponding VS handle.
QMI_CSD_OPEN_VOICE_CONTEXT	0x0025	Opens a Voice Context (VC) and returns the corresponding VC handle.
QMI_CSD_OPEN_VOICE_MANAGER	0x0026	Opens a Voice Manager (VM) and returns the corresponding VM handle.
QMI_CSD_OPEN_DEVICE_CONTROL	0x0027	Instructs the CSD to return the device control handle.
QMI_CSD_CLOSE	0x0028	Closes the CSD stream or session using the specified handle.
QMI_CSD_IOCTL_DEV_CMD_ENABLE	0x0029	Enables an audio device.
QMI_CSD_IOCTL_DEV_CMD_DISABLE	0x002A	Disables one or two audio devices.
QMI_CSD_IOCTL_DEV_CMD_AFE_LOOPBACK	0x002B	Controls the Audio Front End (AFE) loopback on an Rx and a Tx device.
QMI_CSD_IOCTL_DEV_CMD_ANC_CONTROL	0x002C	Controls the Active Noise Cancellation (ANC) on a Rx device.
QMI_CSD_IOCTL_DEV_CMD_COMPANDING_CONTROL	0x002D	Controls companding on a Rx device.
QMI_CSD_IOCTL_DEV_CMD_GET_MAX_DEVICE_NUMS	0x002E	Gets the maximum number of supported devices in the CSD driver.
QMI_CSD_IOCTL_DEV_CMD_GET_DEV_CAPS	0x002F	Gets the full list of device capabilities.
QMI_CSD_IOCTL_DEV_CMD_DTMF_CONTROL	0x0030	Enables/disables Dual-Tone Multifrequency (DTMF) on the device.
QMI_CSD_IOCTL_DEV_CMD_SIDETONE_CONTROL	0x0031	Enables/disables the sidetone on the Rx/Tx device pair.



Table 3-1 QMI\_CSD messages (cont.)

Command	ID	Description
QMI_CSD_IOCTL_DEV_CMD_CONFIGURE	0x0032	Configures a Real-Time (RT) proxy port.
QMI_CSD_IOCTL_VC_CMD_SET_DEVICE_CONFIG	0x0033	Sets the device configuration on the voice processing context.
QMI_CSD_IOCTL_VC_CMD_ENABLE	0x0034	Enables the voice processing context.
QMI_CSD_IOCTL_VC_CMD_DISABLE	0x0035	Disables the voice processing context.
QMI_CSD_IOCTL_VC_CMD_SET_RX_VOLUME_INDEX	0x0036	Sets the Rx volume calibration based on the Rx volume index.
QMI_CSD_IOCTL_VC_CMD_SET_MUTE	0x0037	Sets the mute control.
QMI_CSD_IOCTL_VC_CMD_SET_TX_DTMF_DETECTION	0x0038	Enables/disables Tx DTMF detection. DTMF detection status is sent only to the client enabling Tx DTMF detection via the QMI_CSD_IOCTL_VC_CMD_SET_TX_DTMF_DETECTION command.
QMI_CSD_IOCTL_VC_TX_DTMF_DETECTED_IND	0x0039	Indicates that the Tx DTMF tone is detected.
QMI_CSD_IOCTL_VC_CMD_SET_UI_PROPERTY	0x003A	Sets a UI-controlled property.
QMI_CSD_IOCTL_VC_CMD_GET_UI_PROPERTY	0x003B	Gets the current value of a UI-controlled property.
QMI_CSD_IOCTL_VC_STATE_IND	0x003C	Indicates the state transition of the voice context to/from the Run state.
QMI_CSD_IOCTL_VS_CMD_SET_MEDIA_TYPE	0x003D	Sets the vocoder media type on the stream.
QMI_CSD_IOCTL_VS_CMD_SET_MUTE	0x003E	Sets the mute control.
QMI_CSD_IOCTL_VS_CMD_SET_ENCODER_DTX_MODE	0x003F	Sets the common encoder Discontinuous Transmission (DTX) mode.
QMI_CSD_IOCTL_VS_CMD_SET_DEC_TIMEWARP	0x0040	Sets the common decoder time warping parameter. This command can be sent on a per frame basis depending on the compression and expansion requirement.
QMI_CSD_IOCTL_VS_CMD_SET_ENC_MINMAX_RATE	0x0041	Sets the CDMA-specific encoder minimum and maximum rate.
QMI_CSD_IOCTL_VS_CMD_SET_ENC_RATE_MODULATION	0x0042	Sets the CDMA-specific encoder rate modulation.
QMI_CSD_IOCTL_VS_CMD_VOC_QCELP13K_SET_RATE	0x0043	Sets the Qualcomm Code Excited Linear Prediction (QCELP) 13k encoder rate.

**Table 3-1 QMI\_CSD messages (cont.)**

<b>Command</b>	<b>ID</b>	<b>Description</b>
QMI_CSD_IOCTL_VS_CMD_VOC_4GVNB_SET_RATE	0x0044	Sets the Fourth-Generation Narrowband Vocoder (4GV-NB) encoder rate.
QMI_CSD_IOCTL_VS_CMD_VOC_4GVWB_SET_RATE	0x0045	Sets the Fourth-Generation Wideband Vocoder (4GV-WB) encoder rate.
QMI_CSD_IOCTL_VS_CMD_VOC_AMR_SET_ENC_RATE	0x0046	Sets the Adaptive Multirate (AMR) encoder rate.
QMI_CSD_IOCTL_VS_CMD_VOC_AMRWB_SET_ENC_RATE	0x0047	Sets the wideband AMR (AMR-WB) encoder rate.
QMI_CSD_IOCTL_VS_CMD_SET_DTMF_GENERATION	0x0048	Starts/stops DTMF generation. The completion of DTMF generation, either due to a Stop command or because of the requested duration has elapsed, is indicated to the client via the QMI_CSD_IOCTL_VS_CMD_DTMF_GENERATION_ENDED_IND indication message.
QMI_CSD_IOCTL_VS_DTMF_GENERATION_ENDED_IND	0x0049	Indicates to the stream client that the generation of DTMF tone has ended. This indication is sent by the stream to the client that enabled DTMF generation when the client issues a Stop command or the duration requested by the client has elapsed.
QMI_CSD_IOCTL_VS_CMD_SET_RX_DTMF_DETECTION	0x004A	Enables/disables Rx DTMF detection. The DTMF tone detection status is sent to the client sending this command via the QMI_CSD_IOCTL_VS_CMD_RX_DTMF_DETECTION_IND indication message.
QMI_CSD_IOCTL_VS_RX_DTMF_DETECTED_IND	0x004B	Indicates the Rx DTMF tone detected.
QMI_CSD_IOCTL_VS_CMD_SET_UI_PROPERTY	0x004C	Sets a UI-controlled property of the voice stream.
QMI_CSD_IOCTL_VS_CMD_GET_UI_PROPERTY	0x004D	Gets the current value of a UI-controlled property on a voice stream.
QMI_CSD_IOCTL_VS_CMD_START_RECORD	0x004E	Starts recording the conversation based on the specified direction of the recording.
QMI_CSD_IOCTL_VS_CMD_STOP_RECORD	0x004F	Stop recording the conversation.
QMI_CSD_IOCTL_VS_STATE_IND	0x0050	Indicates the voice stream's state transition to/from the Run state.
QMI_CSD_IOCTL_VS_ENC_BUFFER_IND	0x0051	Indicates to the stream client that an encoder buffer is available for pickup. The media type of the buffer is as passed to the stream in QMI_CSM_OPEN_VOICE_STREAM.

**Table 3-1 QMI\_CSD messages (cont.)**

<b>Command</b>	<b>ID</b>	<b>Description</b>
QMI_CSD_IOCTL_VS_DEC_BUFFER_IND	0x0052	Indicates to the stream client that a decoder buffer must be provided. The media type of the buffer is as passed to the stream in QMI_CSM_OPEN_VOICE_STREAM.
QMI_CSD_IOCTL_VM_CMD_ATTACH_STREAM	0x0053	Attaches a voice stream to the voice manager.
QMI_CSD_IOCTL_VM_CMD_DETACH_STREAM	0x0054	Detaches a voice stream from the voice manager.
QMI_CSD_IOCTL_VM_CMD_ATTACH_CONTEXT	0x0055	Attaches a voice context to the voice manager.
QMI_CSD_IOCTL_VM_CMD_DETACH_CONTEXT	0x0056	Detaches a voice context from the voice manager.
QMI_CSD_IOCTL_VM_CMD_START_VOICE	0x0057	Starts voice on the voice manager.
QMI_CSD_IOCTL_VM_CMD_STOP_VOICE	0x0058	Stops voice on the voice manager.
QMI_CSD_IOCTL_VM_CMD_SET_NETWORK	0x0059	Sets the network type on the voice manager.
QMI_CSD_IOCTL_VM_CMD_SET_VOICE_TIMING	0x005A	Sets the voice timing parameter on the voice manager.
QMI_CSD_IOCTL_VM_CMD_SET_TTY_MODE	0x005B	Sets the TTY mode on the voice manager.
QMI_CSD_IOCTL_VM_CMD_SET_WIDEVOICE	0x005C	Sets WideVoice on the voice manager.
QMI_CSD_OPEN_AUDIO_STREAM	0x005D	Opens an audio stream and returns the corresponding audio stream handle.
QMI_CSD_OPEN_AUDIO_CONTEXT	0x005E	Opens an audio context and returns the corresponding audio context handle.
QMI_CSD_AS_CMD_START_SESSION	0x005F	Starts an audio stream session.
QMI_CSD_AS_CMD_STOP_SESSION	0x0060	Stops an audio stream session.
QMI_CSD_AS_CMD_FLUSH_STREAM	0x0061	Flushes an audio stream.
QMI_CSD_AS_CMD_FLUSH_STREAM_TX	0x0062	Flushes the Tx path in the Read-Write stream.
QMI_CSD_AS_CMD_GET_VOL_LEVELS	0x0063	Gets the volume step range.
QMI_CSD_AS_CMD_GET_DSP_CLK	0x0064	Used in Audio/Video (AV) synchronization to get the current Digital Signal Processor (DSP) time in microseconds.

**Table 3-1 QMI\_CSD messages (cont.)**

<b>Command</b>	<b>ID</b>	<b>Description</b>
QMI_CSD_AS_CMD_GET_RENDERED_TIME	0x0065	Gets the rendered Pulse Code Modulation (PCM) sample time based on the start time of the playback or flush point in microseconds.
QMI_CSD_AS_CMD_GET_SESSION_ID	0x0066	Gets the session ID for an audio stream.
QMI_CSD_AS_CMD_SET_STREAM_FMT_RX_PCM	0x0067	Configures the audio Rx stream to PCM format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_RX_ADPCM	0x0068	Configures the audio Rx stream to Adaptive Differential Pulse Code Modulation (ADPCM) or raw Yamaha 4-bit ADPCM (YADPCM) format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_RX_MIDI	0x0069	Configures the audio Rx stream to Musical Instrument Digital Interface (MIDI) format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_RX_WMAV9	0x006A	Configures the audio Rx stream to Windows Media® Audio 9 format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_RX_WMAV10	0x006B	Configures the audio Rx stream to Windows Media Audio 10 Pro format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_RX_AAC	0x006C	Configures the audio Rx stream to AAC format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_RX_G711	0x006D	Configures the audio Rx stream to G.711 format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_RX_FLAC	0x006E	Configures the audio Rx stream to Free Lossless Audio Codec (FLAC) format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_RX_VORBIS	0x006F	Configures the audio Rx stream to Vorbis format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_RX_AMRWBPLUS	0x0070	Configures the audio Rx stream to Extended Adaptive Multirate Wideband (AMR-WB+) format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_TX_PCM	0x0071	Configures the audio Tx stream to PCM format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_TX_AAC	0x0072	Configures the audio Tx stream to Advanced Audio Codec (AAC) format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_TX_G711	0x0073	Configures the audio Tx stream to G.711 format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_TX_AMRNB	0x0074	Configures the audio Tx stream to AMR-NB format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_TX_AMRWB	0x0075	Configures the audio Tx stream to AMR-WB format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_TX_QCELP13K	0x0076	Configures the audio Tx stream to QCELP13K format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_TX_EVRC	0x0077	Configures the audio Tx stream to Enhanced Variable Rate Codec (EVRC) format.

**Table 3-1 QMI\_CSD messages (cont.)**

<b>Command</b>	<b>ID</b>	<b>Description</b>
QMI_CSD_AS_CMD_SET_STREAM_FMT_TX_EVRCB	0x0078	Configures the audio Tx stream to EVRCB format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_TX_EVRCWB	0x0079	Configures the audio Tx stream to EVRCWB format.
QMI_CSD_AS_CMD_SET_STREAM_FMT_TX_SBC	0x007A	Configures the audio Tx stream to Subband Coding (SBC) format.
QMI_CSD_AS_CMD_SET_STREAM_EOS	0x007B	Sends an End Of Stream (EOS) indication for the audio stream.
QMI_CSD_AS_EVT_EOS_IND	0x007B Indication	Indicates the End of Stream event information (i.e, all data has been rendered) to the stream client. This indication is enabled when the stream is opened and is disabled when the stream is closed.
QMI_CSD_AS_CMD_CONFIG_PP_VOL_MASTER_GAIN	0x007C	Sets the master gain.
QMI_CSD_AS_CMD_CONFIG_PP_VOL_STEREO_GAIN	0x007D	Sets the stereo gain.
QMI_CSD_AS_CMD_CONFIG_PP_VOL_MULTICHANNEL_GAIN	0x007E	Sets the multichannel gain.
QMI_CSD_AS_CMD_CONFIG_PP_VOL_MUTE	0x007F	Sets the mute/unmute control.
QMI_CSD_AS_CMD_CONFIG_PP_EQ_ENABLE	0x0080	Enables, configures, or disables the equalizer for the audio stream.
QMI_CSD_AS_CMD_CONFIG_PP_QCPR	0x0081	Enables, configures, or disables Qconcert Plus Reverb (QCPR) for the audio stream.
QMI_CSD_AS_CMD_CONFIG_PP_SPA	0x0082	Enables, configures, or disables the Spectrum Analyzer (SPA) for the audio stream.
QMI_CSD_AS_CMD_CONFIG_PP_TSM	0x0083	Enables, configures, or disables Time Scale Modification (TSM) for the audio stream.
QMI_CSD_AS_CMD_GET_SPA_DATA	0x0084	Gets the spectrum-analyzed data for the audio stream from the driver. Only Asynchronous mode is supported.
QMI_CSD_AS_EVT_SPA_BUF_READY_IND	0x0084 Indication	Indicates the asynchronous spectrum-analyzed buffer production information to the stream client. The driver publishes EVT Done once the driver is done producing the buffer with spectrum-analyzed data.
QMI_CSD_AS_CMD_SET_DUAL_MONO_REMAP	0x0085	Sets the dual/mono mapping configuration. This is currently used by the Integrated Services Digital Broadcasting – Terrestrial (ISDB-T) feature only.

**Table 3-1 QMI\_CSD messages (cont.)**

<b>Command</b>	<b>ID</b>	<b>Description</b>
QMI_CSD_AS_CMD_ADJUST_SESSION_CLOCK	0x0086	Adjusts the session time. This command sets the sample number to be added or dropped for the ISDB-T feature.
QMI_CSD_AS_CMD_SET_AAC_SBR_PS	0x0087	Sets the Spectral Band Replication (SBR) flag or the Parametric Stereo (PS) flag for the AAC format.
QMI_CSD_AS_CMD_DTMF_CTL	0x0088	Starts/stops the DTMF signal.
QMI_CSD_AS_CMD_SET_STREAM_INFO	0x0089	Sets the stream information properties for this session. This includes the maximum buffer size supported and the type of memory to be passed to the CSD.
QMI_CSD_AS_CMD_GET_RENDERED_BYTE_OFFSET	0x008A	Gets the last rendered byte offset of the bitstream.
QMI_CSD_AS_CMD_GET_MIDI_SEQUENCE_ID	0x008B	Gets the MIDI sequence associated with a MIDI playback session.
QMI_CSD_AS_CMD_ENCODER_BIT_RATE_UPDATE	0x008C	Dynamically changes the encoder bitrate during a recoding session.
QMI_CSD_AS_CMD_CONFIG_DECODER_MULTI_CHANNEL_WMAV10	0x008D	Configures the Windows Media Audio 10 Pro audio decoder to output PCM samples based on a multiple channel configuration defined by the client.
QMI_CSD_AS_CMD_CONFIG_DECODER_MULTI_CHANNEL_EAC3	0x008E	Configures the EAC3 audio decoder to output PCM samples based on a multiple channel configuration defined by the client.
QMI_CSD_AS_EVT_SR_CM_CHANGE_IND	0x008F	Indicates a sample rate change or channel configuration change information to the stream client.
QMI_CSD_AC_CMD_AS_ATTACH	0x0090	Attaches streams to the audio context.
QMI_CSD_AC_CMD_AS_DETACH	0x0091	Detaches streams from the audio context.
QMI_CSD_AC_CMD_SET_DEVICE	0x0092	Sets the device ID information for an audio context.
QMI_CSD_AC_CMD_ENABLE	0x0093	Enables the audio context.
QMI_CSD_AC_CMD_DISABLE	0x0094	Disables the audio context.
QMI_CSD_AC_CMD_CONFIG_PP_VOL_MASTER_GAIN	0x0095	Sets the master gain for the audio context.
QMI_CSD_AC_CMD_CONFIG_PP_VOL_STEREO_GAIN	0x0096	Sets the stereo gain for the audio context.
QMI_CSD_AC_CMD_CONFIG_PP_VOL_MULTICHANNEL_GAIN	0x0097	Sets the multichannel gain for the audio context.

**Table 3-1 QMI\_CSD messages (cont.)**

Command	ID	Description
QMI_CSD_AC_CMD_CONFIG_PP_VOL_MUTE	0x0098	Sets the mute/unmute control for the audio context.
QMI_CSD_AC_CMD_CONFIG_PP_EQ_ENABLE	0x0099	Enables, configures, or disables the equalizer for the audio context.
QMI_CSD_AC_CMD_CONFIG_PP_QCPR	0x009A	Enables, configures, or disables QCPR for the audio context.
QMI_CSD_AC_CMD_CONFIG_PP_SPA	0x009B	Enables, configures, or disables the spectrum analyzer (SPA) for the audio context.
QMI_CSD_AC_CMD_GET_SPA_DATA	0x009C	Gets the spectrum-analyzed data for the audio context from the driver. Only Asynchronous mode is supported.
QMI_CSD_AC_EVT_SPA_BUF_READY_IND	0x009C Indication	Indicates the asynchronous spectrum-analyzed buffer production information to the context client. The driver publishes EVT Done once the driver is done producing the buffer with spectrum-analyzed data.
QMI_CSD_AC_CMD_CONFIG_MULTI_CHANNEL	0x009D	Sets up multiple channels for the audio context. This command applies to the Rx device only.
QMI_CSD_IOCTL_DEV_CMD_CONNECT_DEVICE	0x009E	Connects two devices together, one as a source and the other as a sink.
QMI_CSD_IOCTL_VC_CMD_SET_NUMBER_OF_VOLUME_STEPS	0x009F	Sets the total number of Rx volume steps.
QMI_CSD_IOCTL_VC_CMD_SET_RX_VOLUME_STEP	0x00A0	Sets a specific volume step.
QMI_CSD_IOCTL_VS_CMD_START_PLAYBACK	0x00A1	Starts the injection of playback into the voice call. The playback on the device ID provided is injected into the Tx path of the conversation on the voice call.
QMI_CSD_IOCTL_VS_CMD_STOP_PLAYBACK	0x00A2	Stops the mixing of audio with the voice Tx.
QMI_CSD_IOCTL_VM_CMD_STANDBY_VOICE	0x00A3	Standby voice on the voice manager.
QMI_CSD_IOCTL_DEV_CMD_AANC_CONTROL	0x00A4	Controls the Adaptive Active Noise Cancellation (AANC) on a device.
QMI_CSD_IOCTL_VM_CMD_PAUSE_VOICE	0x00A5	Pause voice on the voice manager.
QMI_CSD_IOCTL_DEV_CMD_RESTART	0x00A6	Dynamically restarts the device at a new sampling rate without bring down the clocks.
QMI_CSD_IOCTL_VC_CMD_SET_CAL_FEATURE_ID	0x00A7	Sets the specific calibration feature ID.
QMI_CSD_IOCTL_VM_CMD_SET_HDVOICE_MODE	0x00A8	Sets the HD Voice mode on the voice manager.

**Table 3-1 QMI\_CSD messages (cont.)**

<b>Command</b>	<b>ID</b>	<b>Description</b>
QMI_CSD_VOICE_CONFIG	0x00A9	Configures an audio device and prepares the associated audio module.
QMI_CSD_VOICE_START	0x00AA	Starts a voice call with the provided audio device.
QMI_CSD_VOICE_END	0x00AB	Ends a voice call and tears down the associated audio device.
QMI_CSD_VOICE_DEVICE_SWITCH	0x00AC	Perform a device switch
QMI_CSD_AFE_LOOPBACK	0x00AD	Enables or disables loopback from the AFE to route Tx data to Rx.
QMI_CSD_VOICE_VOLUME_CONTROL	0x00AE	Configures system volume for voice calls.
QMI_CSD_VOICE_MUTE	0x00AF	Mutes or unmutes the audio for a voice call.
QMI_CSD_DTMF_GENERATION	0x00B0	Generates a DTMF tone.
QMI_CSD_VOICE_DTMF_GENERATION_ENDED_IND	0x00B1 Indication	Indicates that the generation of the DTMF tone has ended.
QMI_CSD_VOICE_DTMF_DETECTION	0x00B2	Enables DTMF detection during a voice call.
QMI_CSD_VOICE_DTMF_DETECTED_IND	0x00B3 Indication	Indicates that a DTMF tone is detected during a voice call.
QMI_CSD_SET_VOICE_FEATURE	0x00B4	Enables voice features.
QMI_CSD_VOICE_RECORD_START	0x00B5	Starts recording during a voice call.
QMI_CSD_VOICE_RECORD_END	0x00B6	Ends recording in a voice call.
QMI_CSD_VOICE_PLAYBACK_START	0x00B7	Starts a playback session during a voice call.
QMI_CSD_VOICE_PLAYBACK_END	0x00B8	Ends playback in a voice call.



## 3.1 QMI\_CSD\_QUERY\_DRIVER\_VERSION

Queries the CSD version number.

### CSD message ID

0x0020

### Version introduced

Major - 1, Minor - 0

### 3.1.1 Request - QMI\_CSD\_QUERY\_DRIVER\_VERSION\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

None

#### Optional TLVs

None

### 3.1.2 Response - QMI\_CSD\_QUERY\_DRIVER\_VERSION\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
CSD Version Number	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Version Number
Length	4			2	
Value	→	uint32	csd_version	4	CSD version format in uint32: 0xMMNNxxRR. Where: MM = Main version number. NN = Minor version number. RR = Revision number. For example, the returned value “uint32 csd_version” is: Main_version = (csd_version & 0xFF000000)»24 Minor_version = (csd_version & 0xFF0000)»16 Revision = (csd_version & 0xFF)

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission

### 3.1.3 Description of QMI\_CSD\_QUERY\_DRIVER\_VERSION REQ/RESP

This command queries the driver version of the CSD on the MSM device.

## 3.2 QMI\_CSD\_INIT

Initializes the CSD before the CSD can provide any functionality.

### CSD message ID

0x0021

### Version introduced

Major - 1, Minor - 0

### 3.2.1 Request - QMI\_CSD\_INIT\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

None

#### Optional TLVs

None

### 3.2.2 Response - QMI\_CSD\_INIT\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section [2.3.1](#)) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	Globally Unique Identifier (GUID) for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.2.3 Description of QMI\_CSD\_INIT REQ/RESP

This command initializes the CSD. After initialization, the CSD can provide the corresponding service expected by the client.

Multiple clients can call QMI\_CSD\_INIT() at the same time; however, the second call adds the reference count only.

QMI\_ERR\_NONE is to be returned only when the request is received and properly processed through to completion without any CSD errors.

If there is a failure of any kind, the QMI error is to be set to a failure.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.3 QMI\_CSD\_DEINIT

Detaches the client from the CSD.

#### CSD message ID

0x0022

#### Version introduced

Major - 1, Minor - 0

#### 3.3.1 Request - QMI\_CSD\_DEINIT\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

None

##### Optional TLVs

None

#### 3.3.2 Response - QMI\_CSD\_DEINIT\_RESP

##### Message type

Response

##### Sender

Service

##### Mandatory TLVs

The Result Code TLV (defined in Section [2.3.1](#)) is always present in the response.

##### Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.3.3 Description of QMI\_CSD\_DEINIT REQ/RESP

This command detaches the client from the CSD. Once the client is detached, the client may not call any CSD functions except QMI\_CSD\_INIT().

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.4 QMI\_CSD\_OPEN\_PASSIVE\_CONTROL\_VOICE\_STREAM

Opens a passive control Voice Stream (VS) and returns the corresponding VS handle.

### CSD message ID

0x0023

### Version introduced

Major - 1, Minor - 0

### 3.4.1 Request - QMI\_CSD\_OPEN\_PASSIVE\_CONTROL\_VOICE\_STREAM\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Session Name	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Session Name
Length	Var			2	
Value	→	string	session_name	Var	Session name.

#### Optional TLVs

None

### 3.4.2 Response - QMI\_CSD\_OPEN\_PASSIVE\_CONTROL\_VOICE\_STREAM\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
Open Status	1.0	1.0
Passive Control Voice Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Open Status
Length	4			2	
Value	→	enum	open_status	4	Open status.
Type	0x11			1	Passive Control Voice Stream Handle
Length	4			2	
Value	→	uint32	qmi_csd_vs_passive_control_handle	4	Passive control voice stream handle.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.4.3 Description of QMI\_CSD\_OPEN\_PASSIVE\_CONTROL\_VOICE\_STREAM REQ/RESP

This command instructs the CSD to open a passive control voice stream and return the corresponding voice stream handle on successful completion. This handle can be used for further operations on this stream until it is closed.

Passive stream sessions are intended for clients to manage UI controls, such as muting and volume levels, while the corresponding full control sessions manage data exchange. This command uses the session name “default modem voice” to obtain a handle to the default stream session for circuit-switched voice calls. The client passes this ID to the open\_id field of csd\_vs\_open\_t() in the CSD API to indicate the opening of a passive control session.

The response returns the handle only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.



## 3.5 QMI\_CSD\_OPEN\_FULL\_CONTROL\_VOICE\_STREAM

Opens a full control VS and returns the corresponding VS handle.

### CSD message ID

0x0024

### Version introduced

Major - 1, Minor - 0

### 3.5.1 Request - QMI\_CSD\_OPEN\_FULL\_CONTROL\_VOICE\_STREAM\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Open Structure	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Open Structure
Length	Var			2	
Value	→	uint8	session_name_len	1	Number of sets of the following elements: • session_name
		string	session_name	Var	Session name.
		enum	direction	4	Direction in which the stream is flowing. Supported values: • 0 – Tx only • 1 – Rx only • 2 – Tx and Rx
		enum	enc_media_type	4	Tx vocoder type. See Appendix B for information on media IDs.
		enum	dec_media_type	4	Rx vocoder type. See Appendix B for information on media IDs.
		enum	network_id	4	Network ID. See Appendix C for information on network IDs. Default: 0.

**Optional TLVs**

None

**3.5.2 Response - QMI\_CSD\_OPEN\_FULL\_CONTROL\_VOICE\_STREAM - RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Open Status	1.0	1.0
Voice Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Open Status
Length	4			2	
Value	→	enum	open_status	4	Open status.
Type	0x11			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	qmi_csd_vs_handle	4	Unique handle for the voice stream.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.5.3 Description of QMI\_CSD\_OPEN\_FULL\_CONTROL\_VOICE\_STREAM REQ/RESP

This command instructs the CSD to open a full control voice stream and returns the corresponding voice stream handle on successful completion. This handle can be used for further operations on this stream until it is closed.

The session name “default modem voice” is reserved for the default stream session for circuit-switched voice calls and cannot be given to any new full control sessions. The creation of two or more full control stream sessions with the same name is not allowed. The client passes this ID to the open\_id field of csd\_vs\_open\_t() in the CSD API to indicate the opening of a full control session.

The response returns the handle only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.6 QMI\_CSD\_OPEN\_VOICE\_CONTEXT

Opens a Voice Context (VC) and returns the corresponding VC handle.

### CSD message ID

0x0025

### Version introduced

Major - 1, Minor - 0

### 3.6.1 Request - QMI\_CSD\_OPEN\_VOICE\_CONTEXT\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Context Open Structure	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Context Open Structure
Length	Var			2	
Value	→	uint8	session_name_len	1	Number of sets of the following elements: • session_name
		string	session_name	Var	Session name.
		enum	direction	4	Direction in which the stream is flowing. Supported values: • 0 – Tx only • 1 – Rx only • 2 – Tx and Rx
		enum	network_id	4	Network ID. See Appendix C for information on network IDs. Default: 0.

#### Optional TLVs

None

### 3.6.2 Response - QMI\_CSD\_OPEN\_VOICE\_CONTEXT\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Open Status	1.0	1.0
Voice Context Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Open Status
Length	4			2	
Value	→	enum	open_status	4	Open status.
Type	0x11			1	Voice Context Handle
Length	4			2	
Value	→	uint32	qmi_csd_vc_handle	4	Unique handle for the voice context.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.6.3 Description of QMI\_CSD\_OPEN\_VOICE\_CONTEXT REQ/RESP

This command opens a voice context. On successful completion, a voice context handle is returned. This handle can be used for further operations on this context until it is closed.

The response returns the handle only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.7 QMI\_CSD\_OPEN\_VOICE\_MANAGER

Opens a Voice Manager (VM) and returns the corresponding VM handle.

### CSD message ID

0x0026

### Version introduced

Major - 1, Minor - 0

### 3.7.1 Request - QMI\_CSD\_OPEN\_VOICE\_MANAGER\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Manager Open Structure	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Manager Open Structure
Length	Var			2	
Value	→	uint8	session_name_len	1	Number of sets of the following elements: • session_name
		string	session_name	Var	Session name.

#### Optional TLVs

None

### 3.7.2 Response - QMI\_CSD\_OPEN\_VOICE\_MANAGER\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
Open Status	1.0	1.0
Voice Manager Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Open Status
Length	4			2	
Value	→	enum	open_status	4	Open status.
Type	0x11			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	qmi_csd_vm_handle	4	Unique handle for the voice manager.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.7.3 Description of QMI\_CSD\_OPEN\_VOICE\_MANAGER REQ/RESP

This command instructs the CSD to return a voice manager handle once a voice manager is open. This handle can be used for further operations on this VM until it is closed.

The response returns the handle only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.8 QMI\_CSD\_OPEN\_DEVICE\_CONTROL

Instructs the CSD to return the device control handle.

### CSD message ID

0x0027

### Version introduced

Major - 1, Minor - 0

### 3.8.1 Request - QMI\_CSD\_OPEN\_DEVICE\_CONTROL\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

None

#### Optional TLVs

None

### 3.8.2 Response - QMI\_CSD\_OPEN\_DEVICE\_CONTROL\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Open Status	1.0	1.0
Device Handle	1.0	1.0



Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Open Status
Length	4			2	
Value	→	enum	open_status	4	Open status.
Type	0x11			1	Device Handle
Length	4			2	
Value	→	uint32	qmi_csd_device_handle	4	Device handle.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.8.3 Description of QMI\_CSD\_OPEN\_DEVICE\_CONTROL REQ/RESP

This command instructs the CSD to return the device control handle once a device control is open. This handle can be used for further operations on the device control until it is closed.

The response returns the handle only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see [Appendix A](#).

## 3.9 QMI\_CSD\_CLOSE

Closes the CSD stream or session using the specified handle.

### CSD message ID

0x0028

### Version introduced

Major - 1, Minor - 0

### 3.9.1 Request - QMI\_CSD\_CLOSE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Device Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Device Handle
Length	4			2	
Value	→	uint32	handle	4	Device handle.

#### Optional TLVs

None

### 3.9.2 Response - QMI\_CSD\_CLOSE\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
Device Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Device Handle
Length	4			2	
Value	→	uint32	handle	4	Device handle.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.9.3 Description of QMI\_CSD\_CLOSE REQ/RESP

This command closes the CSD stream or session using the specified handle.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.10 QMI\_CSD\_IOCTL\_DEV\_CMD\_ENABLE

Enables an audio device.

### CSD message ID

0x0029

### Version introduced

Major - 1, Minor - 0

### 3.10.1 Request - QMI\_CSD\_IOCTL\_DEV\_CMD\_ENABLE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Device Handle	1.0	1.0
Device Enable	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Device Handle
Length	4			2	
Value	→	uint32	handle	4	Device handle.
Type	0x02			1	Device Enable
Length	Var			2	
Value	→	uint8	devs_len	1	Number of sets of the following elements: • dev_id • sample_rate • bits_per_sample
		uint32	dev_id	4	Device ID.
		enum	sample_rate	4	Sample rate. Supported values: • QMI_CSD_DEV_SR_8000 (8000) – 8000 samples per second • QMI_CSD_DEV_SR_16000 (16000) – 16000 samples per second • QMI_CSD_DEV_SR_48000 (48000) – 48000 samples per second

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	bits_per_sample	4	Number of bits per sample. Supported values: <ul style="list-style-type: none"> <li>• QMI_CSD_DEV_BPS_UNKNOWN (0) – Unknown bits per sample</li> <li>• QMI_CSD_DEV_BPS_16 (16) – 16 bits per sample</li> <li>• QMI_CSD_DEV_BPS_24 (24) – 24 bits per sample</li> </ul>

### Optional TLVs

Name	Version introduced	Version last modified
Extended Devices	1.5	1.5

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Extended Devices
Length	Var			2	
Value	→	uint8	extn_devices_len	1	Number of sets of the following elements: <ul style="list-style-type: none"> <li>• dev_id</li> <li>• sample_rate</li> <li>• bits_per_sample</li> </ul>
		uint32	dev_id	4	Device ID.
		enum	sample_rate	4	Sample rate. Supported values: <ul style="list-style-type: none"> <li>• QMI_CSD_DEV_SR_8000 (8000) – 8000 samples per second</li> <li>• QMI_CSD_DEV_SR_16000 (16000) – 16000 samples per second</li> <li>• QMI_CSD_DEV_SR_48000 (48000) – 48000 samples per second</li> </ul>
		enum	bits_per_sample	4	Number of bits per sample. Supported values: <ul style="list-style-type: none"> <li>• QMI_CSD_DEV_BPS_UNKNOWN (0) – Unknown bits per sample</li> <li>• QMI_CSD_DEV_BPS_16 (16) – 16 bits per sample</li> <li>• QMI_CSD_DEV_BPS_24 (24) – 24 bits per sample</li> </ul>

### 3.10.2 Response - QMI\_CSD\_IOCTL\_DEV\_CMD\_ENABLE\_RESP

#### Message type

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Name	Version introduced	Version last modified
Result Code	1.0	1.0

**Optional TLVs**

Name	Version introduced	Version last modified
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

**3.10.3 Description of QMI\_CSD\_IOCTL\_DEV\_CMD\_ENABLE REQ/RESP**

This command enables an audio device by using the specified handle and to enable a payload structure.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.11 QMI\_CSD\_IOCTL\_DEV\_CMD\_DISABLE

Disables one or two audio devices.

### CSD message ID

0x002A

### Version introduced

Major - 1, Minor - 0

### 3.11.1 Request - QMI\_CSD\_IOCTL\_DEV\_CMD\_DISABLE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Device Handle	1.0	1.0
Device Disable	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Device Handle
Length	4			2	
Value	→	uint32	handle	4	Device handle.
Type	0x02			1	Device Disable
Length	Var			2	
Value	→	uint8	dev_ids_len	1	Number of sets of the following elements: • dev_ids
		uint32	dev_ids	Var	Array of the device IDs to be disabled. The variable length array is converted to: Number of actual devices to be disabled, followed by the actual device ID array. Supported values: 0, 1, 2.

#### Optional TLVs

Name	Version introduced	Version last modified
Extended Devices	1.5	1.6

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Extended Devices
Length	Var			2	
Value	→	uint8	extn_devices_len	1	Number of sets of the following elements: • extn_devices
		uint32	extn_devices	Var	Extended devices.

### 3.11.2 Response - QMI\_CSD\_IOCTL\_DEV\_CMD\_DISABLE\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Name	Version introduced	Version last modified
Result Code	1.0	1.0

#### Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid



### 3.11.3 Description of QMI\_CSD\_IOCTL\_DEV\_CMD\_DISABLE REQ/RESP

This command disables an audio device by using the device ID.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.12 QMI\_CSD\_IOCTL\_DEV\_CMD\_AFE\_LOOPBACK

Controls the Audio Front End (AFE) loopback on an Rx and a Tx device.

### CSD message ID

0x002B

### Version introduced

Major - 1, Minor - 0

### 3.12.1 Request - QMI\_CSD\_IOCTL\_DEV\_CMD\_AFE\_LOOPBACK\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Device Handle	1.0	1.0
Audio Front End Loopback	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Device Handle
Length	4			2	
Value	→	uint32	handle	4	Device handle.
Type	0x02			1	Audio Front End Loopback
Length	11			2	
Value	→	uint32	tx_dev_id	4	Recording (Tx) device ID.
		uint32	rx_dev_id	4	Playback (Rx) device ID.
		boolean	enable	1	Indicates whether the AFE is enabled: • 1 – Enable (Default) • 0 – Disable.
		uint16	afe_mode	2	AFE loopback mode. Default: 1; all other values are reserved.

#### Optional TLVs

None

### 3.12.2 Response - QMI\_CSD\_IOCTL\_DEV\_CMD\_AFE\_LOOPBACK\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.12.3 Description of QMI\_CSD\_IOCTL\_DEV\_CMD\_AFE\_LOOPBACK REQ/RESP

This command controls the AFE loopback.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.13 QMI\_CSD\_IOCTL\_DEV\_CMD\_ANC\_CONTROL

Controls the Active Noise Cancellation (ANC) on a Rx device.

#### CSD message ID

0x002C

#### Version introduced

Major - 1, Minor - 0

#### 3.13.1 Request - QMI\_CSD\_IOCTL\_DEV\_CMD\_ANC\_CONTROL\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Device Handle	1.0	1.0
Active Noise Cancellation	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Device Handle
Length	4			2	
Value	→	uint32	handle	4	Device handle.
Type	0x02			1	Active Noise Cancellation
Length	5			2	
Value	→	uint32	rx_dev_id	4	Playback (Rx) device ID.
		boolean	enable	1	Indicates whether the ANC feature is enabled: • 1 – Enable • 0 – Disable

##### Optional TLVs

None

### 3.13.2 Response - QMI\_CSD\_IOCTL\_DEV\_CMD\_ANC\_CONTROL\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.13.3 Description of QMI\_CSD\_IOCTL\_DEV\_CMD\_ANC\_CONTROL REQ/RESP

This command enables/disables ANC.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.14 QMI\_CSD\_IOCTL\_DEV\_CMD\_COMPANDING\_CONTROL

Controls companding on a Rx device.

### CSD message ID

0x002D

### Version introduced

Major - 1, Minor - 0

### 3.14.1 Request - QMI\_CSD\_IOCTL\_DEV\_CMD\_COMPANDING\_CONTROL\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Device Handle	1.0	1.0
Companding Control	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Device Handle
Length	4			2	
Value	→	uint32	handle	4	Device handle.
Type	0x02			1	Companding Control
Length	8			2	
Value	→	uint32	rx_dev_id	4	Playback (Rx) device ID.
		enum	qmi_csd_comp_options	4	Indicates the companding option. Supported values: <ul style="list-style-type: none"> <li>• QMI_CSD_CODEC_COMP_DISABLE (0) – Disables companding</li> <li>• QMI_CSD_CODEC_COMP_ENABLE_STATIC (1) – Enables static companding</li> <li>• QMI_CSD_CODEC_COMP_ENABLE_DYNAMIC (2) – Enables dynamic companding</li> </ul>

**Optional TLVs**

None

**3.14.2 Response - QMI\_CSD\_IOCTL\_DEV\_CMD\_COMPANDING - CONTROL\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

**3.14.3 Description of QMI\_CSD\_IOCTL\_DEV\_CMD\_COMPANDING - CONTROL REQ/RESP**

This command controls companding on a Rx device.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.15 QMI\_CSD\_IOCTL\_DEV\_CMD\_GET\_MAX\_DEVICE\_NUMS

Gets the maximum number of supported devices in the CSD driver.

#### CSD message ID

0x002E

#### Version introduced

Major - 1, Minor - 0

#### 3.15.1 Request - QMI\_CSD\_IOCTL\_DEV\_CMD\_GET\_MAX\_DEVICE\_NUMS\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Device Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Device Handle
Length	4			2	
Value	→	uint32	handle	4	Device handle.

##### Optional TLVs

None

#### 3.15.2 Response - QMI\_CSD\_IOCTL\_DEV\_CMD\_GET\_MAX\_DEVICE\_NUMS\_RESP

##### Message type

Response

##### Sender

Service



## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Maximum Number of Devices	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Maximum Number of Devices
Length	4			2	
Value	→	uint32	max_num_devices	4	Maximum number of supported devices in the CSD driver.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.15.3 Description of QMI\_CSD\_IOCTL\_DEV\_CMD\_GET\_MAX\_DEVICE\_NUMS REQ/RESP

This command gets the maximum number of supported devices in the CSD driver. The response returns the maximum number of supported devices only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.16 QMI\_CSD\_IOCTL\_DEV\_CMD\_GET\_DEV\_CAPS

Gets the full list of device capabilities.

### CSD message ID

0x002F

### Version introduced

Major - 1, Minor - 0

### 3.16.1 Request - QMI\_CSD\_IOCTL\_DEV\_CMD\_GET\_DEV\_CAPS\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Device Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Device Handle
Length	4			2	
Value	→	uint32	handle	4	Device handle.

#### Optional TLVs

None

### 3.16.2 Response - QMI\_CSD\_IOCTL\_DEV\_CMD\_GET\_DEV\_CAPS\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Device Capabilities	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Device Capabilities
Length	Var			2	
Value	→	uint32	num_devs	4	Number of devices to query.
		uint16	qmi_csd_dev_caps_list_len	2	Number of sets of the following elements: • dev_id • sr_bitmask • bps_bitmask
		uint32	dev_id	4	Device ID.
		mask32	sr_bitmask	4	Bitmask of sample rates supported.
		mask32	bps_bitmask	4	Bitmask of bits per sample supported.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.16.3 Description of QMI\_CSD\_IOCTL\_DEV\_CMD\_GET\_DEV\_CAPS REQ/RESP

This command gets the full list of device capabilities. The response returns the device capabilities only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.17 QMI\_CSD\_IOCTL\_DEV\_CMD\_DTMF\_CONTROL

Enables/disables Dual-Tone Multifrequency (DTMF) on the device.

### CSD message ID

0x0030

### Version introduced

Major - 1, Minor - 0

### 3.17.1 Request - QMI\_CSD\_IOCTL\_DEV\_CMD\_DTMF\_CONTROL\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Device Handle	1.0	1.0
DTMF Control	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Device Handle
Length	4			2	
Value	→	uint32	handle	4	Device handle.
Type	0x02			1	DTMF Control
Length	Var			2	
Value	→	int64	dtmf_duration_in_ms	8	Duration of the DTMF tone in milliseconds. The value must be $\geq -1$ . Supported values: <ul style="list-style-type: none"> <li>• -1 – Continuous DTMF of infinite duration</li> <li>• 0 – Stops a continuous DTMF, if it was started</li> <li>• Any positive value – Duration in milliseconds</li> </ul>
		uint16	dtmf_high_freq	2	DTMF high-tone frequency. Supported values: 100 to 4000 Hz.
		uint16	dtmf_low_freq	2	DTMF low-tone frequency. Supported values: 100 to 400 Hz.
		uint16	dtmf_gain	2	DTMF volume setting: Q13 gain values.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	dev_ids_len	2	Number of sets of the following elements: • dev_ids
		uint32	dev_ids	Var	List of device IDs that must be enabled/disabled for DTMF. The number of devices to enable/disable DTMF is followed by the dev_ids array filled with the actual number of device entries. The structure does not require the addition of uint16 num_devs.

**Optional TLVs**

None

**3.17.2 Response - QMI\_CSD\_IOCTL\_DEV\_CMD\_DTMF\_CONTROL\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.17.3 Description of QMI\_CSD\_IOCTL\_DEV\_CMD\_DTMF\_CONTROL REQ/RESP

This command enables/disables DTMF on the devices.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.18 QMI\_CSD\_IOCTL\_DEV\_CMD\_SIDETONE\_CONTROL

Enables/disables the sidetone on the Rx/Tx device pair.

### CSD message ID

0x0031

### Version introduced

Major - 1, Minor - 0

### 3.18.1 Request - QMI\_CSD\_IOCTL\_DEV\_CMD\_SIDETONE\_CONTROL - REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Device Handle	1.0	1.0
Sidetone Control	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Device Handle
Length	4			2	
Value	→	uint32	handle	4	Device handle.
Type	0x02			1	Sidetone Control
Length	12			2	
Value	→	enum	sidetone_ctrl	4	Command ID for the sidetone control. Supported values: • QMI_CSD_DEV_SIDETONE_DEFAULT (0) – Default setting for the sidetone • QMI_CSD_DEV_SIDETONE_ENABLE (1) – Enables the sidetone • QMI_CSD_DEV_SIDETONE_DISABLE (2) – Disables the sidetone
		uint32	rx_dev_id	4	Playback (Rx) device ID.
		uint32	tx_dev_id	4	Recording (Tx) device ID.

**Optional TLVs**

None

**3.18.2 Response - QMI\_CSD\_IOCTL\_DEV\_CMD\_SIDETONE\_CONTROL\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

**3.18.3 Description of QMI\_CSD\_IOCTL\_DEV\_CMD\_SIDETONE\_CONTROL REQ/RESP**

This command enables/disables the sidetone on the Rx/Tx device pair.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.



## 3.19 QMI\_CSD\_IOCTL\_DEV\_CMD\_CONFIGURE

Configures a Real-Time (RT) proxy port.

### CSD message ID

0x0032

### Version introduced

Major - 1, Minor - 0

### 3.19.1 Request - QMI\_CSD\_IOCTL\_DEV\_CMD\_CONFIGURE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Device Handle	1.0	1.0
Device ID	1.0	1.0
RT Port Proxy Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Device Handle
Length	4			2	
Value	→	uint32	handle	4	Device handle.
Type	0x02			1	Device ID
Length	4			2	
Value	→	uint32	dev_id	4	Device ID.
Type	0x03			1	RT Port Proxy Configuration
Length	18			2	
Value	→	uint32	cfg_hdr	4	GUID header for a configuration structure type.
		uint32	num_channels	4	Number of channels. Supported values: 1 to 8.
		uint16	interleaved	2	Indicates whether the data exchanged between an AFE and RT port is interleaved. Supported values: <ul style="list-style-type: none"> <li>• 0 – Noninterleaved</li> <li>• 1 – Interleaved</li> </ul>

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	frame_size	2	Maximum transaction buffer size in bytes, including all channels. Supported values: > 0. For example, a 5-ms buffer for 16-bit, 16-kHz Mono PCM samples has a frame size of: $5(\text{ms}) * 2(\text{bytes/sample}) * 16(\text{kHz}) = 160 \text{ bytes}$
		uint16	jitter_allowance	2	Configures the amount of jitter in bytes that the port allows. For example, if +/- 10 msec of jitter is anticipated in the timing of sending frames to the port and the configuration is 16-kHz Mono 16-bit samples, this field is: $10 \text{ msec} * 16 \text{ samples/msec} * 2 \text{ bytes/sample} = 320$
		uint16	low_water_mark	2	Low watermark in bytes, including all channels. If the number of bytes in an internal circular buffer is less than low_water_mark, the low_water_mark event is sent to applications via the AFE_EVENT_RT_PROXY_PORT_STATUS event. Supported values: <ul style="list-style-type: none"> <li>• 0 – Do not send the low_water_mark event.</li> <li>• &gt; 0 – Send the low_water_mark in bytes to trigger the event.</li> </ul> <b>Note:</b> Use of the watermark event is optional. It is used for debugging purposes.
		uint16	high_water_mark	2	High watermark in bytes, including all channels. If the number of bytes in an internal circular buffer exceeds (TOTAL_CIRC_BUF_SIZE: high_water_mark), the high_water_mark event is sent to applications via the AFE_EVENT_RT_PROXY_PORT_STATUS event. Supported values: <ul style="list-style-type: none"> <li>• 0 – Do not send the high_water_mark event.</li> <li>• &gt; 0 – Send the high_water_mark event if the circular buffer fullness exceeds (TOTAL_CIRC_BUF_SIZE: high_water_mark).</li> </ul> <b>Note:</b> Use of the watermark event is optional. It is used for debugging purposes.

**Optional TLVs**

None

**3.19.2 Response - QMI\_CSD\_IOCTL\_DEV\_CMD\_CONFIGURE\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

**3.19.3 Description of QMI\_CSD\_IOCTL\_DEV\_CMD\_CONFIGURE REQ/RESP**

This command configures a RT proxy port.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.20 QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_DEVICE\_CONFIG

Sets the device configuration on the voice processing context.

### CSD message ID

0x0033

### Version introduced

Major - 1, Minor - 0

### 3.20.1 Request - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_DEVICE\_CONFIG\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Device Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x02			1	Device Configuration
Length	20			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	tx_dev_num	4	CSD Tx device number.
		uint32	rx_dev_num	4	CSD Rx device number.
		uint32	tx_dev_sr	4	CSD Tx device sampling rate in Hz.
		uint32	rx_dev_sr	4	CSD Rx device sampling rate in Hz.

#### Optional TLVs

Name	Version introduced	Version last modified
Echo Cancellation Reference Device	1.0	1.2

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Echo Cancellation Reference Device
Length	4			2	
Value	→	uint32	ec_ref_dev_num	4	CSD echo cancellation reference device ID.

### 3.20.2 Response - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_DEVICE\_CONFIG\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.20.3 Description of QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_DEVICE\_CONFIG REQ/RESP

This command sets the device configuration on the voice processing context.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

## 3.21 QMI\_CSD\_IOCTL\_VC\_CMD\_ENABLE

Enables the voice processing context.

### CSD message ID

0x0034

### Version introduced

Major - 1, Minor - 0

### 3.21.1 Request - QMI\_CSD\_IOCTL\_VC\_CMD\_ENABLE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Transaction Identifier	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x02			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.

#### Optional TLVs

None

### 3.21.2 Response - QMI\_CSD\_IOCTL\_VC\_CMD\_ENABLE\_RESP

#### Message type

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

**3.21.3 Description of QMI\_CSD\_IOCTL\_VC\_CMD\_ENABLE REQ/RESP**

This command enables the voice processing context.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.



## 3.22 QMI\_CSD\_IOCTL\_VC\_CMD\_DISABLE

Disables the voice processing context.

### CSD message ID

0x0035

### Version introduced

Major - 1, Minor - 0

### 3.22.1 Request - QMI\_CSD\_IOCTL\_VC\_CMD\_DISABLE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Transaction Identifier	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x02			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.

#### Optional TLVs

None

### 3.22.2 Response - QMI\_CSD\_IOCTL\_VC\_CMD\_DISABLE\_RESP

#### Message type

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

**3.22.3 Description of QMI\_CSD\_IOCTL\_VC\_CMD\_DISABLE REQ/RESP**

This command disables the voice processing context.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.23 QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_RX\_VOLUME\_INDEX

Sets the Rx volume calibration based on the Rx volume index.

#### CSD message ID

0x0036

#### Version introduced

Major - 1, Minor - 0

#### 3.23.1 Request - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_RX\_VOLUME\_INDEX - REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Rx Volume Index	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x02			1	Rx Volume Index
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	vol_index	4	Rx target volume index to be set to context.

##### Optional TLVs

None

### 3.23.2 Response - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_RX\_VOLUME\_INDEX\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.23.3 Description of QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_RX\_VOLUME\_-INDEX REQ/RESP

This command sets the Rx volume calibration based on the Rx volume index.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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2016-05-16 00:15:01 PDT  
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## 3.24 QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_MUTE

Sets the mute control.

### CSD message ID

0x0037

### Version introduced

Major - 1, Minor - 0

### 3.24.1 Request - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_MUTE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Mute Control	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x02			1	Mute Control
Length	12			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		enum	direction	4	Direction in which the stream is flowing: • 0 – Tx only • 1 – Rx only • 2 – Tx and Rx
		enum	mute_flag	4	Mute disable/enable: • 0 – Unmute • 1 – Mute

**Optional TLVs**

Name	Version introduced	Version last modified
Mute Ramp Duration for Smooth Effect	1.2	1.2

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Mute Ramp Duration for Smooth Effect
Length	2			2	
Value	→	uint16	ramp_duration	2	Ramp duration to disable/enable the Mute feature. Range: 0 to 5000 ms.

**3.24.2 Response - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_MUTE\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

**3.24.3 Description of QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_MUTE REQ/RESP**

This command sets the mute control.

In minor version 2, the Set Mute command has been enhanced. The client can control the ramp-up or ramp-down of the mute/unmute duration for a smooth audio effect and to avoid unpleasant sudden changes in the audio signal.

If the optional Mute Ramp Duration for Smooth Effect TLV is not present, the legacy behavior of a single-step jump is preserved.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).



## 3.25 QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_TX\_DTMF\_DETECTION

Enables/disables Tx DTMF detection. DTMF detection status is sent only to the client enabling Tx DTMF detection via the QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_TX\_DTMF\_DETECTION command.

### CSD message ID

0x0038

### Version introduced

Major - 1, Minor - 0

### 3.25.1 Request - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_TX\_DTMF\_DETECTION\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Tx DTMF Detection	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x02			1	Tx DTMF Detection
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	enable	4	Enables/disables Tx DTMF detection. Supported values: • 1 – Enable • 0 – Disable

#### Optional TLVs

None

### 3.25.2 Response - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_TX\_DTMF\_DETECTION\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.25.3 Description of QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_TX\_DTMF\_DETECTION\_REQ/RESP

This command enables/disables Tx DTMF detection.

Only one client can request Tx DTMF detection on a specified context at one time. If another client requests Tx DTMF detection while the previous client's Tx DTMF detection is still active, the request fails.

When Tx DTMF detection is enabled and Tx DTMF is detected, the service sends an indication back to the control point via QMI\_CSD\_IOCTL\_VC\_TX\_DTMF\_DETECTED\_IND.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see [Appendix A](#).

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## 3.26 QMI\_CSD\_IOCTL\_VC\_TX\_DTMF\_DETECTED\_IND

Indicates that the Tx DTMF tone is detected.

### CSD message ID

0x0039

### Version introduced

Major - 1, Minor - 0

### 3.26.1 Indication - QMI\_CSD\_IOCTL\_VC\_TX\_DTMF\_DETECTED\_IND

#### Message type

Indication

#### Sender

Service

#### Scope

Unicast (only to the control point that sent the QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_TX\_DTMF\_DETECTION command)

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Low DTMF Frequency Detection	1.0	1.0
High DTMF Frequency Detection	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x02			1	Low DTMF Frequency Detection
Length	2			2	
Value	→	uint16	dtmf_low_freq	2	Low DTMF tone that was detected.
Type	0x03			1	High DTMF Frequency Detection
Length	2			2	
Value	→	uint16	dtmf_high_freq	2	High DTMF tone that was detected.

#### Optional TLVs

None

### 3.26.2 Description of QMI\_CSD\_IOCTL\_VC\_TX\_DTMF\_DETECTED\_IND

This indication communicates that a Tx DTMF has been detected.

The indication is sent to only the control point that has enabled Tx DTMF detection by sending the QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_TX\_DTMF\_DETECTION command.

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## 3.27 QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_UI\_PROPERTY

Sets a UI-controlled property.

### CSD message ID

0x003A

### Version introduced

Major - 1, Minor - 0

### 3.27.1 Request - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_UI\_PROPERTY\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
UI Property	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x02			1	UI Property
Length	Var			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	module_id	4	ID of the module to be configured. Refer to <a href="#">80-N4404-1</a> for information on module IDs.
		uint32	param_id	4	ID of the parameter to be configured. Refer to <a href="#">80-N4404-1</a> for information on parameter IDs.
		uint16	param_data_len	2	Number of sets of the following elements: • param_data

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	param_data	Var	Actual data for the module ID and parameter ID. Refer to <a href="#">80-N4404-1</a> for information on the payload for different module/parameter IDs.

**Optional TLVs**

None

**3.27.2 Response - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_UI\_PROPERTY\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section [2.3.1](#)) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
<b>Type</b>	0x10			1	Voice Context Handle
<b>Length</b>	4			2	
<b>Value</b>	→	uint32	handle	4	Unique handle for the voice context.
<b>Type</b>	0x11			1	Transaction Identifier
<b>Length</b>	4			2	
<b>Value</b>	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
<b>Type</b>	0x12			1	CSD Status
<b>Length</b>	4			2	
<b>Value</b>	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.27.3 Description of QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_UI\_PROPERTY REQ/RESP

This command sets a UI-controlled property.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).



## 3.28 QMI\_CSD\_IOCTL\_VC\_CMD\_GET\_UI\_PROPERTY

Gets the current value of a UI-controlled property.

### CSD message ID

0x003B

### Version introduced

Major - 1, Minor - 0

### 3.28.1 Request - QMI\_CSD\_IOCTL\_VC\_CMD\_GET\_UI\_PROPERTY\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
UI Property	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x02			1	UI Property
Length	12			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	module_id	4	ID of the module to be configured. Refer to <a href="#">80-N4404-1</a> for information on module IDs.
		uint32	param_id	4	ID of the parameter to be configured. Refer to <a href="#">80-N4404-1</a> for information on parameter IDs.

#### Optional TLVs

Name	Version introduced	Version last modified
Get UI Param Size	1.3	1.3

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Get UI Param Size
Length	4			2	
Value	→	uint32	param_size	4	Data size of this module ID and parameter ID combination. The default value is 16 bytes.

### 3.28.2 Response - QMI\_CSD\_IOCTL\_VC\_CMD\_GET\_UI\_PROPERTY\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0
UI Property Payload	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x13			1	UI Property Payload
Length	Var			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	module_id	4	ID of the module to be configured. Refer to <a href="#">80-N4404-1</a> for information on module IDs.
		uint32	param_id	4	ID of the parameter to be configured. Refer to <a href="#">80-N4404-1</a> for information on parameter IDs.
		uint16	param_data_len	2	Number of sets of the following elements: • param_data
		uint8	param_data	Var	Actual data for the module ID and parameter ID. Refer to <a href="#">80-N4404-1</a> for information on the payload for different module/parameter IDs.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.28.3 Description of QMI\_CSD\_IOCTL\_VC\_CMD\_GET\_UI\_PROPERTY REQ/RESP

This command gets a UI-controlled property.

The response returns the UI-controlled properties only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see [Appendix A](#).

## 3.29 QMI\_CSD\_IOCTL\_VC\_STATE\_IND

Indicates the state transition of the voice context to/from the Run state.

### CSD message ID

0x003C

### Version introduced

Major - 1, Minor - 0

### 3.29.1 Indication - QMI\_CSD\_IOCTL\_VC\_STATE\_IND

#### Message type

Indication

#### Sender

Service

#### Scope

Unicast

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.0	1.0
Voice Context State	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x02			1	Voice Context State
Length	4			2	
Value	→	uint32	qmi_csd_ioctl_vc_state_id	4	Voice context state.

#### Optional TLVs

None

### 3.29.2 Description of QMI\_CSD\_IOCTL\_VC\_STATE\_IND

This indication communicates a voice context transit to/from the Run state.

### 3.30 QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_MEDIA\_TYPE

Sets the vocoder media type on the stream.

#### CSD message ID

0x003D

#### Version introduced

Major - 1, Minor - 0

#### 3.30.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_MEDIA\_TYPE\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Media Type	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	Media Type
Length	12			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		enum	rx_media_id	4	Sets the Rx vocoder type. See Appendix B for information on media IDs.
		enum	tx_media_id	4	Sets the Tx vocoder type. See Appendix B for information on media IDs.

##### Optional TLVs

None

### 3.30.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_MEDIA\_TYPE\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.30.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_MEDIA\_TYPE REQ/RESP

This command sets the vocoder media type on the voice stream.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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### 3.31 QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_MUTE

Sets the mute control.

#### CSD message ID

0x003E

#### Version introduced

Major - 1, Minor - 0

#### 3.31.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_MUTE\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Mute Control	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	Mute Control
Length	12			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		enum	direction	4	Direction in which the stream is flowing: <ul style="list-style-type: none"> <li>• 0 – Tx only</li> <li>• 1 – Rx only</li> <li>• 2 – Tx and Rx</li> </ul>
		enum	mute_flag	4	Mute status: <ul style="list-style-type: none"> <li>• 0 – Unmute</li> <li>• 1 – Mute with silence</li> <li>• 2 – Mute with comfort noise generation</li> </ul>



**Optional TLVs**

Name	Version introduced	Version last modified
Ramp Duration	1.2	1.2

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Ramp Duration
Length	2			2	
Value	→	uint16	ramp_duration	2	Ramp duration to disable or enable the Mute feature. Range: 0 to 5000 ms.

**3.31.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_MUTE\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

**3.31.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_MUTE REQ/RESP**

This command sets the mute control on a stream.

In minor version 2, the Set Mute command has been enhanced. The client can control the ramp-up or ramp-down mute/unmute duration for a smooth audio effect and to avoid unpleasant sudden changes in the audio signal.

If the optional Ramp Duration TLV is not present, the legacy behavior of a single-step jump is preserved.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

## 3.32 QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_ENCODER\_DTX\_MODE

Sets the common encoder Discontinuous Transmission (DTX) mode.

### CSD message ID

0x003F

### Version introduced

Major - 1, Minor - 0

### 3.32.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_ENCODER\_DTX\_MODE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Encoder DTX Mode	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	Encoder DTX Mode
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	enable	4	Toggle DTX on/off: • 0 – Disable • 1 – Enable

#### Optional TLVs

None

### 3.32.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_ENCODER\_DTX\_MODE\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.32.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_ENCODER\_DTX\_MODE REQ/RESP

This command sets the common encoder DTX mode.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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### 3.33 QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_DEC\_TIMEWARP

Sets the common decoder time warping parameter. This command can be sent on a per frame basis depending on the compression and expansion requirement.

#### CSD message ID

0x0040

#### Version introduced

Major - 1, Minor - 0

#### 3.33.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_DEC\_TIMEWARP\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Timewarp Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	Timewarp Configuration
Length	14			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint16	enable_time_warp	2	Toggle time warping on or off: • 0x0000 – Disable • 0x0001 – Enable

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	factor	2	Sets the playback compression and expansion factor. This factor is also known as the time warping expansion length. Supported values: Narrowband: • 80 to 160 – Compression • 160 to 320 – Expansion Wideband: • 160 to 320 – Compression • 320 to 640 – Expansion
		uint16	enable_phase_match	2	Toggle phase matching on or off: • 0x0000 – Disable • 0x0001 – Enable
		uint16	run_length	2	Run length is equal to the number of consecutive erasures the decoder has decoded immediately prior to the decoding of the current packet. Supported values: > 0.
		int16	phase_offset	2	Phase offset is equal to the difference between the number of frames encoded and decoded. Supported values: -2, -1, 0, 1, and 2.

**Optional TLVs**

None

**3.33.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_DEC\_TIMEWARP\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.33.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_DEC\_TIMEWARP REQ/RESP

This command sets the common decoder time warping parameters.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.



### 3.34 QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_ENC\_MINMAX\_RATE

Sets the CDMA-specific encoder minimum and maximum rate.

#### CSD message ID

0x0041

#### Version introduced

Major - 1, Minor - 0

#### 3.34.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_ENC\_MINMAX\_RATE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Encoder Rate	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	Encoder Rate
Length	12			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		enum	min_rate	4	Sets the lower bound encoder rate: <ul style="list-style-type: none"> <li>• 0x0000 – Blank frame</li> <li>• 0x0001 – Eighth rate</li> <li>• 0x0002 – Quarter rate</li> <li>• 0x0003 – Half rate</li> <li>• 0x0004 – Full rate</li> </ul>

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	max_rate	4	Sets the upper bound encoder rate: <ul style="list-style-type: none"> <li>• 0x0000 – Blank frame</li> <li>• 0x0001 – Eighth rate</li> <li>• 0x0002 – Quarter rate</li> <li>• 0x0003 – Half rate</li> <li>• 0x0004 – Full rate</li> </ul>

**Optional TLVs**

None

**3.34.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_ENC\_MINMAX\_RATE\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.34.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_ENC\_MINMAX\_RATE\_REQ/RESP

This command sets the CDMA-specific encoder minimum and maximum rate.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.35 QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_ENC\_RATE\_MODULATION

Sets the CDMA-specific encoder rate modulation.

#### CSD message ID

0x0042

#### Version introduced

Major - 1, Minor - 0

#### 3.35.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_ENC\_RATE\_MODULATION\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Encoder Rate Modulation	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	Encoder Rate Modulation
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint32	mode	4	Sets the vocoder reduced rate modulation mode. The bit structure for the mode is: <ul style="list-style-type: none"> <li>• b0 – Vocoder rate modulation is enabled when 1, and disabled when 0</li> <li>• b1 – Select X=S when 1, and select X=1/S when 0</li> <li>• b9 to b2 – Rate limit factor is the value of S</li> <li>• b31 to b10 – Reserved; keep as zeros</li> </ul> See Appendix D for more information.

**Optional TLVs**

None

### 3.35.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_ENC\_RATE - MODULATION\_RESP

**Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.35.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_ENC\_RATE - MODULATION REQ/RESP

This command sets the CDMA-specific encoder rate modulation.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.36 QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_QCELP13K\_SET\_RATE

Sets the Qualcomm Code Excited Linear Prediction (QCELP) 13k encoder rate.

#### CSD message ID

0x0043

#### Version introduced

Major - 1, Minor - 0

#### 3.36.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_QCELP13K\_SET\_RATE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
QCELP13K Vocoder Rate	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	QCELP13K Vocoder Rate
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		enum	rate	4	Sets the QCELP13K vocoder rate: <ul style="list-style-type: none"> <li>• 0x00000000 – 14.4 kbps</li> <li>• 0x00000001 – 12.2 kbps</li> <li>• 0x00000002 – 11.2 kbps</li> <li>• 0x00000003 – 9.0 kbps</li> <li>• 0x00000004 – 7.2 kbps</li> </ul>

**Optional TLVs**

None

**3.36.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_QCELP13K\_SET - RATE\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid



### 3.36.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_QCELP13K\_SET - RATE REQ/RESP

This command sets the QCELP13K encoder rate.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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### 3.37 QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_4GVNB\_SET\_RATE

Sets the Fourth-Generation Narrowband Vocoder (4GV-NB) encoder rate.

#### CSD message ID

0x0044

#### Version introduced

Major - 1, Minor - 0

#### 3.37.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_4GVNB\_SET\_RATE - REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
4GV-NB Vocoder Rate	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	4GV-NB Vocoder Rate
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		enum	rate	4	Sets the narrowband vocoder rate: <ul style="list-style-type: none"> <li>• 0x00000000 – 10.0 kbps</li> <li>• 0x00000001 – 8.5 kbps</li> <li>• 0x00000002 – 7.5 kbps</li> <li>• 0x00000003 – 7.0 kbps</li> <li>• 0x00000004 – 6.6 kbps</li> <li>• 0x00000005 – 6.2 kbps</li> <li>• 0x00000006 – 5.8 kbps</li> <li>• 0x00000007 – 4.8 kbps</li> </ul>

**Optional TLVs**

None

**3.37.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_4GVNB\_SET\_RATE\_-RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.37.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_4GVNB\_SET\_- RATE\_REQ/RESP

This command sets the 4GV-NB encoder rate.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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### 3.38 QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_4GVWB\_SET\_RATE

Sets the Fourth-Generation Wideband Vocoder (4GV-WB) encoder rate.

#### CSD message ID

0x0045

#### Version introduced

Major - 1, Minor - 0

#### 3.38.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_4GVWB\_SET\_RATE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
4GV-WB Vocoder Rate	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	4GV-WB Vocoder Rate
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		enum	rate	4	Sets the wideband vocoder rate: <ul style="list-style-type: none"> <li>• 0x00000000 – 8.5 kbps</li> <li>• 0x00000004 – 10.0 kbps</li> <li>• 0x00000007 – 4.8 kbps</li> </ul>

#### Optional TLVs

None

### 3.38.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_4GVWB\_SET\_RATE\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.38.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_4GVWB\_SET\_- RATE REQ/RESP

This command sets the 4GV-WB encoder rate.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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### 3.39 QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_AMR\_SET\_ENC\_RATE

Sets the Adaptive Multirate (AMR) encoder rate.

#### CSD message ID

0x0046

#### Version introduced

Major - 1, Minor - 0

#### 3.39.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_AMR\_SET\_ENC\_RATE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
AMR Encoder Rate	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	AMR Encoder Rate
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		enum	mode	4	Sets the AMR encoder rate: <ul style="list-style-type: none"> <li>• 0x00000000 – 4.75 kbps</li> <li>• 0x00000001 – 5.15 kbps</li> <li>• 0x00000002 – 5.90 kbps</li> <li>• 0x00000003 – 6.70 kbps</li> <li>• 0x00000004 – 7.40 kbps</li> <li>• 0x00000005 – 7.95 kbps</li> <li>• 0x00000006 – 10.2 kbps</li> <li>• 0x00000007 – 12.2 kbps</li> </ul>



**Optional TLVs**

None

**3.39.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_AMR\_SET\_ENC - RATE\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.39.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_AMR\_SET\_ENC\_- RATE\_REQ/RESP

This command sets the AMR encoder rate.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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### 3.40 QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_AMRWB\_SET\_ENC\_RATE

Sets the wideband AMR (AMR-WB) encoder rate.

#### CSD message ID

0x0047

#### Version introduced

Major - 1, Minor - 0

#### 3.40.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_AMRWB\_SET\_ENC - RATE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
AMR-WB Encoder Rate	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	AMR-WB Encoder Rate
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		enum	mode	4	Sets the AMR-WB encoder rate: <ul style="list-style-type: none"> <li>• 0x00000000 – 6.60 kbps</li> <li>• 0x00000001 – 8.85 kbps</li> <li>• 0x00000002 – 12.65 kbps</li> <li>• 0x00000003 – 14.25 kbps</li> <li>• 0x00000004 – 15.85 kbps</li> <li>• 0x00000005 – 18.25 kbps</li> <li>• 0x00000006 – 19.85 kbps</li> <li>• 0x00000007 – 23.05 kbps</li> <li>• 0x00000008 – 23.85 kbps</li> </ul>

**Optional TLVs**

None

**3.40.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_AMRWB\_SET\_ENC\_RATE\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.40.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_VOC\_AMRWB\_SET\_ENC\_RATE REQ/RESP

This command sets the AMR-WB encoder rate.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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### 3.41 QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_DTMF\_GENERATION

Starts/stops DTMF generation. The completion of DTMF generation, either due to a Stop command or because of the requested duration has elapsed, is indicated to the client via the QMI\_CSD\_IOCTL\_VS\_CMD\_DTMF\_GENERATION\_ENDED\_IND indication message.

#### CSD message ID

0x0048

#### Version introduced

Major - 1, Minor - 0

#### 3.41.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_DTMF\_GENERATION\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
DTMF Generation Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	DTMF Generation Configuration
Length	16			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint16	direction	2	DTMF generation direction. Supported values: QMI_CSD_VS_DTMF_GENERATION_DIRECTION_TX. Rx DTMF generation is available on the audio stream side, which is not supported in the initial version. It is also available from the device control side.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	mix_flag	2	Mix with speech flag. Supported values: <ul style="list-style-type: none"> <li>• 1 – Generated DTMF is mixed with the speech</li> <li>• 0 – Generated DTMF replaces the speech</li> </ul>
		uint16	tone_1	2	DTMF tone 1. Supported values: 100 to 4000 Hz.
		uint16	tone_2	2	DTMF tone 2. Supported values: 100 to 4000 Hz.
		uint16	gain	2	DTMF tone gain. Supported values: Linear value in Q13 format. This value must be set to a negative gain because the level of tone generation is fixed at 0 dBFS.
		int16	duration	2	Duration of the tone. Duration includes ramp-up and ramp-down periods. The ramp-up and ramp-down periods are 1 ms and 2 ms, respectively. Supported values: <ul style="list-style-type: none"> <li>• -1 – Infinite duration; the client sends 0 (stops the infinite tone) duration to end the tone</li> <li>• 0 – Stops the infinite tone</li> <li>• &gt; 0 – Finite duration in milliseconds</li> </ul>

**Optional TLVs**

None

**3.41.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_DTMF\_GENERATION\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

**3.41.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_DTMF\_GENERATION REQ/RESP**

This command starts/stops DTMF generation.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.



## 3.42 QMI\_CSD\_IOCTL\_VS\_DTMF\_GENERATION\_ENDED\_IND

Indicates to the stream client that the generation of DTMF tone has ended. This indication is sent by the stream to the client that enabled DTMF generation when the client issues a Stop command or the duration requested by the client has elapsed.

### CSD message ID

0x0049

### Version introduced

Major - 1, Minor - 0

### 3.42.1 Indication - QMI\_CSD\_IOCTL\_VS\_DTMF\_GENERATION\_ENDED\_IND

#### Message type

Indication

#### Sender

Service

#### Scope

Unicast

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
DTMF Tone Direction	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x03			1	DTMF Tone Direction
Length	2			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint16	direction	2	Direction in which the DTMF tone has been generated. Supported values: QMI_CSD_VS_DTMF_GENERATION_DIRECTION_TX.

**Optional TLVs**

None

**3.42.2 Description of QMI\_CSD\_IOCTL\_VS\_DTMF\_GENERATION\_ENDED\_IND**

This indication communicates to the stream client that the generation of the DTMF tone has ended.

### 3.43 QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_RX\_DTMF\_DETECTION

Enables/disables Rx DTMF detection. The DTMF tone detection status is sent to the client sending this command via the QMI\_CSD\_IOCTL\_VS\_CMD\_RX\_DTMF\_DETECTION\_IND indication message.

#### CSD message ID

0x004A

#### Version introduced

Major - 1, Minor - 0

#### 3.43.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_RX\_DTMF\_DETECTION\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Rx DTMF Detection	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	Rx DTMF Detection
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	enable	4	Enables/disables Rx DTMF detection. Supported values: • 1 – Enable • 0 – Disable

#### Optional TLVs

None

### 3.43.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_RX\_DTMF\_DETECTION\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.43.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_RX\_DTMF\_DETECTION\_REQ/RESP

This command enables/disables DTMF detection.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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2016-05-16 00:15:01 PDT  
deon\_zhang@askey.com.tw

## 3.44 QMI\_CSD\_IOCTL\_VS\_RX\_DTMF\_DETECTED\_IND

Indicates the Rx DTMF tone detected.

### CSD message ID

0x004B

### Version introduced

Major - 1, Minor - 0

### 3.44.1 Indication - QMI\_CSD\_IOCTL\_VS\_RX\_DTMF\_DETECTED\_IND

#### Message type

Indication

#### Sender

Service

#### Scope

Unicast (only to the control point who sent the QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_RX\_DTMF\_DETECTION command)

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
DTMF Low Frequency Detection	1.0	1.0
DTMF High Frequency Detection	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	DTMF Low Frequency Detection
Length	2			2	
Value	→	uint16	dtmf_low_freq	2	Low DTMF tone is detected.
Type	0x03			1	DTMF High Frequency Detection
Length	2			2	
Value	→	uint16	dtmf_high_freq	2	High DTMF tone is detected.

#### Optional TLVs

None

### 3.44.2 Description of QMI\_CSD\_IOCTL\_VS\_RX\_DTMF\_DETECTED\_IND

This indication communicates that an Rx DTMF has been detected. It is sent only to the control point that has enabled Rx DTMF detection by sending the QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_RX\_DTMF\_DETECTION command.

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## 3.45 QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_UI\_PROPERTY

Sets a UI-controlled property of the voice stream.

### CSD message ID

0x004C

### Version introduced

Major - 1, Minor - 0

### 3.45.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_UI\_PROPERTY\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
UI Property Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	UI Property Configuration
Length	Var			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	module_id	4	ID of the module to be configured. Refer to <a href="#">80-N4404-1</a> for information on module IDs.
		uint32	param_id	4	ID of the parameter to be configured. Refer to <a href="#">80-N4404-1</a> for information on parameter IDs.
		uint16	param_data_len	2	Number of sets of the following elements: • param_data



Field	Field value	Field type	Parameter	Size (byte)	Description
		uint8	param_data	Var	Actual data for the module ID and parameter ID. Refer to <a href="#">80-N4404-1</a> for information on the payload for different module/parameter IDs.

**Optional TLVs**

None

**3.45.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_UI\_PROPERTY\_-RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section [2.3.1](#)) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
<b>Type</b>	0x10			1	Voice Stream Handle
<b>Length</b>	4			2	
<b>Value</b>	→	uint32	handle	4	Unique handle for the voice stream.
<b>Type</b>	0x11			1	Transaction Identifier
<b>Length</b>	4			2	
<b>Value</b>	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
<b>Type</b>	0x12			1	CSD Status
<b>Length</b>	4			2	
<b>Value</b>	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.45.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_UI\_PROPERTY REQ/RESP

This command sets a UI-controlled property on a voice stream.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.46 QMI\_CSD\_IOCTL\_VS\_CMD\_GET\_UI\_PROPERTY

Gets the current value of a UI-controlled property on a voice stream.

### CSD message ID

0x004D

### Version introduced

Major - 1, Minor - 0

### 3.46.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_GET\_UI\_PROPERTY\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
UI Property	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	UI Property
Length	12			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	module_id	4	ID of the module to be configured. Refer to <a href="#">80-N4404-1</a> for information on module IDs.
		uint32	param_id	4	ID of the parameter to be configured. Refer to <a href="#">80-N4404-1</a> for information on parameter IDs.

#### Optional TLVs

Name	Version introduced	Version last modified
Get UI Param Size	1.3	1.3

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Get UI Param Size
Length	4			2	
Value	→	uint32	param_size	4	Data size of this module ID and parameter ID combination. The default value is 16 bytes.

### 3.46.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_GET\_UI\_PROPERTY\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0
UI Property Payload	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x13			1	UI Property Payload
Length	Var			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	module_id	4	ID of the module to be configured. Refer to <a href="#">80-N4404-1</a> for information on module IDs.
		uint32	param_id	4	ID of the parameter to be configured. Refer to <a href="#">80-N4404-1</a> for information on parameter IDs.
		uint16	param_data_len	2	Number of sets of the following elements: • param_data
		uint8	param_data	Var	Actual data for the module ID and parameter ID. Refer to <a href="#">80-N4404-1</a> for information on the payload for different module/parameter IDs.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.46.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_GET\_UI\_PROPERTY REQ/RESP

This command gets a UI-controlled property on the voice stream.

This command returns a UI-controlled property only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see [Appendix A](#).

## 3.47 QMI\_CSD\_IOCTL\_VS\_CMD\_START\_RECORD

Starts recording the conversation based on the specified direction of the recording.

### CSD message ID

0x004E

### Version introduced

Major - 1, Minor - 0

### 3.47.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_START\_RECORD\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
Rx Tap Point	1.0	1.0
Tx Tap Point	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x03			1	Rx Tap Point
Length	4			2	
Value	→	uint32	rx_tap_point	4	Tap point to use on the Rx path. Supported values: • QMI_CSD_VS_TAP_POINT_NONE (0x00010F78) – Do not record the Rx path. • QMI_CSD_VS_TAP_POINT_STREAM_END (0x00010F79) – Rx tap point is at the end of the stream.

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x04			1	Tx Tap Point
Length	4			2	
Value	→	uint32	tx_tap_point	4	Tap point to use on the Tx path. Supported values: • QMI_CSD_VS_TAP_POINT_NONE (0x00010F78) – Do not record the Tx path. • QMI_CSD_VS_TAP_POINT_STREAM_END (0x00010F79) – Tx tap point is at the end of the stream.

### Optional TLVs

Name	Version introduced	Version last modified
Device ID	1.2	1.2
Recording Mode	1.2	1.2

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Device ID
Length	4			2	
Value	→	uint32	dev_id	4	Conversation data is available on the recording device ID. Data is routed to the AFE port of the device ID indicated.
Type	0x11			1	Recording Mode
Length	4			2	
Value	→	enum	mode	4	Recording mode. Supported values: • QMI_CSD_VS_RECORD_MODE_TX_RX_STEREO (0x00010F7A) – L,R format is recorded from the AFE. • QMI_CSD_VS_RECORD_MODE_TX_RX_MIXING (0x00010F7B) – L+R format is recorded from the AFE.

## 3.47.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_START\_RECORD\_RESP

### Message type

Response

Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.47.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_START\_RECORD REQ/RESP

This command starts recording the conversation based on the specified direction of the recording. Any changes to rx\_tap\_point or tx\_tap\_point requires QMI\_CSD\_IOCTL\_VS\_CMD\_STOP\_RECORD\_REQ to be committed before the changes can be applied using a new call to QMI\_CSD\_IOCTL\_VS\_CMD\_START\_RECORD\_REQ with modified values. Within the CSD, the voice recording is performed from the audio path by a call to csd\_read() in the CSD API using a properly configured audio stream handle.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.



## 3.48 QMI\_CSD\_IOCTL\_VS\_CMD\_STOP\_RECORD

Stop recording the conversation.

### CSD message ID

0x004F

### Version introduced

Major - 1, Minor - 0

### 3.48.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_STOP\_RECORD\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.

#### Optional TLVs

None

### 3.48.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_STOP\_RECORD\_RESP

#### Message type

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.48.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_STOP\_RECORD REQ/RESP

This command stops recording the conversation.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.49 QMI\_CSD\_IOCTL\_VS\_STATE\_IND

Indicates the voice stream's state transition to/from the Run state.

### CSD message ID

0x0050

### Version introduced

Major - 1, Minor - 0

### 3.49.1 Indication - QMI\_CSD\_IOCTL\_VS\_STATE\_IND

#### Message type

Indication

#### Sender

Service

#### Scope

Unicast

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0
Voice Stream State	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	Voice Stream State
Length	4			2	
Value	→	uint32	qmi_csd_ioctl_vc_state_id	4	Voice stream state.

#### Optional TLVs

None

### 3.49.2 Description of QMI\_CSD\_IOCTL\_VS\_STATE\_IND

This indication communicates a voice stream transit to/from the Run state.

## 3.50 QMI\_CSD\_IOCTL\_VS\_ENC\_BUFFER\_IND

Indicates to the stream client that an encoder buffer is available for pickup. The media type of the buffer is as passed to the stream in QMI\_CSM\_OPEN\_VOICE\_STREAM.

### CSD message ID

0x0051

### Version introduced

Major - 1, Minor - 0

### 3.50.1 Indication - QMI\_CSD\_IOCTL\_VS\_ENC\_BUFFER\_IND

#### Message type

Indication

#### Sender

Service

#### Scope

Unicast

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.

#### Optional TLVs

None

### 3.50.2 Description of QMI\_CSD\_IOCTL\_VS\_ENC\_BUFFER\_IND

This indication communicates to the stream client that an encoder buffer is available for pickup.

## 3.51 QMI\_CSD\_IOCTL\_VS\_DEC\_BUFFER\_IND

Indicates to the stream client that a decoder buffer must be provided. The media type of the buffer is as passed to the stream in QMI\_CSM\_OPEN\_VOICE\_STREAM.

### CSD message ID

0x0052

### Version introduced

Major - 1, Minor - 0

### 3.51.1 Indication - QMI\_CSD\_IOCTL\_VS\_DEC\_BUFFER\_IND

#### Message type

Indication

#### Sender

Service

#### Scope

Unicast

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.

#### Optional TLVs

None

### 3.51.2 Description of QMI\_CSD\_IOCTL\_VS\_DEC\_BUFFER\_IND

This indication communicates to the stream client that a decoder buffer must be provided.

## 3.52 QMI\_CSD\_IOCTL\_VM\_CMD\_ATTACH\_STREAM

Attaches a voice stream to the voice manager.

### CSD message ID

0x0053

### Version introduced

Major - 1, Minor - 0

### 3.52.1 Request - QMI\_CSD\_IOCTL\_VM\_CMD\_ATTACH\_STREAM\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Attach Voice Stream	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x02			1	Attach Voice Stream
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	stream_handle	4	Stream to attach.

#### Optional TLVs

None

### 3.52.2 Response - QMI\_CSD\_IOCTL\_VM\_CMD\_ATTACH\_STREAM\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.52.3 Description of QMI\_CSD\_IOCTL\_VM\_CMD\_ATTACH\_STREAM REQ/RESP

This command attaches a VS to the VM.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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### 3.53 QMI\_CSD\_IOCTL\_VM\_CMD\_DETACH\_STREAM

Detaches a voice stream from the voice manager.

#### CSD message ID

0x0054

#### Version introduced

Major - 1, Minor - 0

#### 3.53.1 Request - QMI\_CSD\_IOCTL\_VM\_CMD\_DETACH\_STREAM\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Detach Voice Stream	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	Detach Voice Stream
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	stream_handle	4	Stream to detach.

##### Optional TLVs

None

### 3.53.2 Response - QMI\_CSD\_IOCTL\_VM\_CMD\_DETACH\_STREAM\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.53.3 Description of QMI\_CSD\_IOCTL\_VM\_CMD\_DETACH\_STREAM REQ/RESP

This command detaches a voice stream from the voice manager.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.54 QMI\_CSD\_IOCTL\_VM\_CMD\_ATTACH\_CONTEXT

Attaches a voice context to the voice manager.

### CSD message ID

0x0055

### Version introduced

Major - 1, Minor - 0

### 3.54.1 Request - QMI\_CSD\_IOCTL\_VM\_CMD\_ATTACH\_CONTEXT\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Attach Voice Context	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x02			1	Attach Voice Context
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	context_handle	4	Voice context handle opened by the QMI_CSD_OPEN_VOICE_CONTEXT_REQ message, which must be attached.

#### Optional TLVs

None

### 3.54.2 Response - QMI\_CSD\_IOCTL\_VM\_CMD\_ATTACH\_CONTEXT\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.54.3 Description of QMI\_CSD\_IOCTL\_VM\_CMD\_ATTACH\_CONTEXT REQ/RESP

This command attaches a voice context to the voice manager.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.55 QMI\_CSD\_IOCTL\_VM\_CMD\_DETACH\_CONTEXT

Detaches a voice context from the voice manager.

### CSD message ID

0x0056

### Version introduced

Major - 1, Minor - 0

### 3.55.1 Request - QMI\_CSD\_IOCTL\_VM\_CMD\_DETACH\_CONTEXT\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Detach Context Control	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x02			1	Detach Context Control
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	context_handle	4	Voice context handle having been opened upon QMI_CSD_OPEN_VOICE_CONTEXT_REQ message, which must be attached.

#### Optional TLVs

None

### 3.55.2 Response - QMI\_CSD\_IOCTL\_VM\_CMD\_DETACH\_CONTEXT\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid



### 3.55.3 Description of QMI\_CSD\_IOCTL\_VM\_CMD\_DETACH\_CONTEXT REQ/RESP

This command detaches a voice context from the voice manager.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.56 QMI\_CSD\_IOCTL\_VM\_CMD\_START\_VOICE

Starts voice on the voice manager.

### CSD message ID

0x0057

### Version introduced

Major - 1, Minor - 0

### 3.56.1 Request - QMI\_CSD\_IOCTL\_VM\_CMD\_START\_VOICE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Transaction Identifier	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x02			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.

#### Optional TLVs

None

### 3.56.2 Response - QMI\_CSD\_IOCTL\_VM\_CMD\_START\_VOICE\_RESP

#### Message type

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.56.3 Description of QMI\_CSD\_IOCTL\_VM\_CMD\_START\_VOICE REQ/RESP

This command starts voice on the voice manager.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.57 QMI\_CSD\_IOCTL\_VM\_CMD\_STOP\_VOICE

Stops voice on the voice manager.

### CSD message ID

0x0058

### Version introduced

Major - 1, Minor - 0

### 3.57.1 Request - QMI\_CSD\_IOCTL\_VM\_CMD\_STOP\_VOICE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Transaction Identifier	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x02			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.

#### Optional TLVs

None

### 3.57.2 Response - QMI\_CSD\_IOCTL\_VM\_CMD\_STOP\_VOICE\_RESP

#### Message type

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.57.3 Description of QMI\_CSD\_IOCTL\_VM\_CMD\_STOP\_VOICE REQ/RESP

This command stops voice on the voice manager.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.58 QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_NETWORK

Sets the network type on the voice manager.

### CSD message ID

0x0059

### Version introduced

Major - 1, Minor - 0

### 3.58.1 Request - QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_NETWORK\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Network Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x02			1	Network Configuration
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		enum	network_id	4	Network ID. See Appendix C for information on network IDs. Default: 0.

#### Optional TLVs

None

### 3.58.2 Response - QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_NETWORK\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.58.3 Description of QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_NETWORK REQ/RESP

This command sets the network type on the voice manager.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.59 QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_VOICE\_TIMING

Sets the voice timing parameter on the voice manager.

### CSD message ID

0x005A

### Version introduced

Major - 1, Minor - 0

### 3.59.1 Request - QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_VOICE\_TIMING\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Voice Timing Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x02			1	Voice Timing Configuration
Length	12			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint16	mode	2	Vocoder frame synchronization mode: <ul style="list-style-type: none"> <li>• 0 – No frame synchronization</li> <li>• 1 – Hard vocoder frame reference interrupt; 20 ms</li> </ul>
		uint16	enc_offset	2	Offset in microseconds from the vocoder frame reference to deliver a Tx vocoder packet. The offset must be less than 20 ms.
		uint16	dec_req_offset	2	Offset in microseconds from the vocoder frame reference to request a Rx vocoder packet. The offset must be less than 20 ms.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	dec_offset	2	Offset in microseconds from the vocoder frame reference to indicate the deadline to receive an Rx vocoder packet. The offset must be less than 20 ms. Rx vocoder packets received after this deadline are not guaranteed to be processed.

**Optional TLVs**

None

**3.59.2 Response - QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_VOICE\_TIMING - RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.59.3 Description of QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_VOICE\_TIMING REQ/RESP

This command sets the voice timing parameter on the voice manager.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.60 QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_TTY\_MODE

Sets the TTY mode on the voice manager.

### CSD message ID

0x005B

### Version introduced

Major - 1, Minor - 0

### 3.60.1 Request - QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_TTY\_MODE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
TTY Mode Type	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x02			1	TTY Mode Type
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		enum	mode	4	Mode type: <ul style="list-style-type: none"> <li>• 0 – Teletypewriter (TTY) is disabled.</li> <li>• 1 – Hearing Carry Over (HCO)</li> <li>• 2 – Voice Carry Over (VCO)</li> <li>• 3 – Full</li> </ul>

#### Optional TLVs

None

### 3.60.2 Response - QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_TTY\_MODE\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.60.3 Description of QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_TTY\_MODE REQ/RESP

This command sets the TTY mode on the voice manager.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.61 QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_WIDEVOICE

Sets WideVoice on the voice manager.

### CSD message ID

0x005C

### Version introduced

Major - 1, Minor - 0

### 3.61.1 Request - QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_WIDEVOICE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Wide Voice Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x02			1	Wide Voice Configuration
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	enable	4	WideVoice enable/disable: <ul style="list-style-type: none"> <li>• 1 – Enable</li> <li>• 0 – Disable</li> </ul>

#### Optional TLVs

None

### 3.61.2 Response - QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_WIDEVOICE\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.0	1.0
Transaction Identifier	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid



### 3.61.3 Description of QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_WIDEVOICE REQ/RESP

This command sets WideVoice on the voice manager.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.62 QMI\_CSD\_OPEN\_AUDIO\_STREAM

Opens an audio stream and returns the corresponding audio stream handle.

### CSD message ID

0x005D

### Version introduced

Major - 1, Minor - 0

### 3.62.1 Request - QMI\_CSD\_OPEN\_AUDIO\_STREAM\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Open Structure	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Open Structure
Length	28			2	
Value	→	enum	op_code	4	Operation code for the audio stream.
		enum	data_mode	4	Defines the behavior of data path APIs. Currently only supports asynchronous calls.
		enum	format_type_rx	4	Format type for playback. See Appendix E for information on supported audio formats.
		enum	format_type_tx	4	Format type for recording. See Appendix E for information on supported audio formats.

Field	Field value	Field type	Parameter	Size (byte)	Description
		mask32	open_mask	4	Specifies the open mode, and indicates the optional fields that are present to support the open fields. Supported values: <ul style="list-style-type: none"> <li>• 0 – Field does not exist</li> <li>• 1 – Field exists; supported values: <ul style="list-style-type: none"> <li>– Bit 0 – Session ID mask</li> <li>– Bit 1 – Sample rate or channel mode change notification mask</li> <li>– Bit 2 – Multiframe support mask; this mask is only valid on Tx streams</li> <li>– Bit 3 – Gapless mode mask; this mask is only valid for playback</li> <li>– Bits 4 to 31 – Reserved = 0</li> </ul> </li> </ul>
		uint32	session_id	4	Session ID for the stream. This client-supplied handle identifies a specific session. (Optional)
		uint32	frames_per_buf	4	Number of encoded frames that can be packed into each encoder buffer. Default: 1.

**Optional TLVs**

None

**3.62.2 Response - QMI\_CSD\_OPEN\_AUDIO\_STREAM\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Open Status	1.0	1.0
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Open Status
Length	4			2	
Value	→	enum	open_status	4	Open status.
Type	0x11			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	qmi_csd_as_handle	4	Unique handle for the audio stream.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.62.3 Description of QMI\_CSD\_OPEN\_AUDIO\_STREAM REQ/RESP

This command instructs the CSD to return an audio stream handle once an audio stream is open. This handle can be used for further operations on this audio stream until it is closed.

The response returns the handle only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.63 QMI\_CSD\_OPEN\_AUDIO\_CONTEXT

Opens an audio context and returns the corresponding audio context handle.

#### CSD message ID

0x005E

#### Version introduced

Major - 1, Minor - 0

#### 3.63.1 Request - QMI\_CSD\_OPEN\_AUDIO\_CONTEXT\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Open Structure	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Open Structure
Length	16			2	
Value	→	enum	ac_category	4	Audio context category. Supported values: <ul style="list-style-type: none"> <li>• 1 – Playback category</li> <li>• 2 – Recording category</li> <li>• 3 – System sound category</li> <li>• 4 – Voice recognition category</li> </ul>
		enum	ac_mode	4	Running mode for the audio context. Live mode drops the data buffer. Non-live mode blocks the data buffer when there is no output buffer. Supported values: <ul style="list-style-type: none"> <li>• 0 – Non-live mode sample is buffered in the AFE.</li> <li>• 1 – Live mode. The sample is not buffered if the polling is not fast enough.</li> </ul>
		uint32	dev_id	4	Device ID. Supported values are OEM-defined.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	sample_rate	4	Sample rate for the audio context. Supported values: <ul style="list-style-type: none"> <li>• QMI_CSD_AC_SR_8K (8000) – 8000 samples per second</li> <li>• QMI_CSD_AC_SR_16K (16000) – 16000 samples per second</li> <li>• QMI_CSD_AC_SR_48K (48000) – 48000 samples per second</li> </ul>

**Optional TLVs**

None

**3.63.2 Response - QMI\_CSD\_OPEN\_AUDIO\_CONTEXT\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Open Status	1.0	1.0
Audio Context Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Open Status
Length	4			2	
Value	→	enum	open_status	4	Open status.
Type	0x11			1	Audio Context Handle
Length	4			2	
Value	→	uint32	qmi_csd_ac_handle	4	Audio context handle.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

**3.63.3 Description of QMI\_CSD\_OPEN\_AUDIO\_CONTEXT REQ/RESP**

This command instructs the CSD to return an audio context handle once a audio context is open. This handle can be used for further operations on this audio context until it is closed.

The response returns the handle only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see [Appendix A](#).

## 3.64 QMI\_CSD\_AS\_CMD\_START\_SESSION

Starts an audio stream session.

### CSD message ID

0x005F

### Version introduced

Major - 1, Minor - 0

### 3.64.1 Request - QMI\_CSD\_AS\_CMD\_START\_SESSION\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Audio Stream Timestamp Structure	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Audio Stream Timestamp Structure
Length	12			2	
Value	→	enum	ts_type	4	Type of timestamp: • 0 – Invalid timestamp • 1 – Absolute timestamp • 2 – Relative timestamp
		uint32	ts_high	4	Upper 32 bits of the microsecond timestamp.
		uint32	ts_low	4	Lower 32 bits of the microsecond timestamp.

#### Optional TLVs

None



### 3.64.2 Response - QMI\_CSD\_AS\_CMD\_START\_SESSION\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.64.3 Description of QMI\_CSD\_AS\_CMD\_START\_SESSION REQ/RESP

This command starts an audio stream session.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.65 QMI\_CSD\_AS\_CMD\_STOP\_SESSION

Stops an audio stream session.

### CSD message ID

0x0060

### Version introduced

Major - 1, Minor - 0

### 3.65.1 Request - QMI\_CSD\_AS\_CMD\_STOP\_SESSION\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

#### Optional TLVs

None

### 3.65.2 Response - QMI\_CSD\_AS\_CMD\_STOP\_SESSION\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.65.3 Description of QMI\_CSD\_AS\_CMD\_STOP\_SESSION REQ/RESP

This command stops an audio stream session.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.66 QMI\_CSD\_AS\_CMD\_FLUSH\_STREAM

Flushes an audio stream.

### CSD message ID

0x0061

### Version introduced

Major - 1, Minor - 0

### 3.66.1 Request - QMI\_CSD\_AS\_CMD\_FLUSH\_STREAM\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

#### Optional TLVs

None

### 3.66.2 Response - QMI\_CSD\_AS\_CMD\_FLUSH\_STREAM\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.66.3 Description of QMI\_CSD\_AS\_CMD\_FLUSH\_STREAM REQ/RESP

This command flushes an audio stream.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.67 QMI\_CSD\_AS\_CMD\_FLUSH\_STREAM\_TX

Flushes the Tx path in the Read-Write stream.

### CSD message ID

0x0062

### Version introduced

Major - 1, Minor - 0

### 3.67.1 Request - QMI\_CSD\_AS\_CMD\_FLUSH\_STREAM\_TX\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

#### Optional TLVs

None

### 3.67.2 Response - QMI\_CSD\_AS\_CMD\_FLUSH\_STREAM\_TX\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.67.3 Description of QMI\_CSD\_AS\_CMD\_FLUSH\_STREAM\_TX REQ/RESP

This command flushes the Tx path of a Read-Write stream.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.68 QMI\_CSD\_AS\_CMD\_GET\_VOL\_LEVELS

Gets the volume step range.

### CSD message ID

0x0063

### Version introduced

Major - 1, Minor - 0

### 3.68.1 Request - QMI\_CSD\_AS\_CMD\_GET\_VOL\_LEVELS\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

#### Optional TLVs

None

### 3.68.2 Response - QMI\_CSD\_AS\_CMD\_GET\_VOL\_LEVELS\_RESP

#### Message type

Response

#### Sender

Service



## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Stream Handle	1.0	1.0
Volume Step Range	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x12			1	Volume Step Range
Length	4			2	
Value	→	uint32	num_levels	4	Range for the volume level steps.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.68.3 Description of QMI\_CSD\_AS\_CMD\_GET\_VOL\_LEVELS REQ/RESP

This command gets the volume step range.

The response returns a valid volume step range only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.69 QMI\_CSD\_AS\_CMD\_GET\_DSP\_CLK

Used in Audio/Video (AV) synchronization to get the current Digital Signal Processor (DSP) time in microseconds.

### CSD message ID

0x0064

### Version introduced

Major - 1, Minor - 0

### 3.69.1 Request - QMI\_CSD\_AS\_CMD\_GET\_DSP\_CLK\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

#### Optional TLVs

None

### 3.69.2 Response - QMI\_CSD\_AS\_CMD\_GET\_DSP\_CLK\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Stream Handle	1.0	1.0
Current DSP Time in Microseconds	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x12			1	Current DSP Time in Microseconds
Length	12			2	
Value	→	enum	ts_type	4	Type of timestamp: • 0 – Invalid timestamp • 1 – Absolute timestamp • 2 – Relative timestamp
		uint32	ts_high	4	Upper 32 bits of the microsecond timestamp.
		uint32	ts_low	4	Lower 32 bits of the microsecond timestamp.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.69.3 Description of QMI\_CSD\_AS\_CMD\_GET\_DSP\_CLK\_REQ/RESP

This command gets the current DSP time in microseconds.

A valid DSP time is returned only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.70 QMI\_CSD\_AS\_CMD\_GET\_RENDERED\_TIME

Gets the rendered Pulse Code Modulation (PCM) sample time based on the start time of the playback or flush point in microseconds.

### CSD message ID

0x0065

### Version introduced

Major - 1, Minor - 0

### 3.70.1 Request - QMI\_CSD\_AS\_CMD\_GET\_RENDERED\_TIME\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

#### Optional TLVs

None

### 3.70.2 Response - QMI\_CSD\_AS\_CMD\_GET\_RENDERED\_TIME\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Stream Handle	1.0	1.0
Rendered Time in Microseconds	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x12			1	Rendered Time in Microseconds
Length	12			2	
Value	→	enum	ts_type	4	Type of timestamp: • 0 – Invalid timestamp • 1 – Absolute timestamp • 2 – Relative timestamp
		uint32	ts_high	4	Upper 32 bits of the microsecond timestamp.
		uint32	ts_low	4	Lower 32 bits of the microsecond timestamp.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.70.3 Description of QMI\_CSD\_AS\_CMD\_GET\_RENDERED\_TIME REQ/RESP

This command gets the rendered PCM sample time based on the start time of the playback or flush point in microseconds.

The response returns a valid rendered time only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see [Appendix A](#).

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## 3.71 QMI\_CSD\_AS\_CMD\_GET\_SESSION\_ID

Gets the session ID for an audio stream.

### CSD message ID

0x0066

### Version introduced

Major - 1, Minor - 0

### 3.71.1 Request - QMI\_CSD\_AS\_CMD\_GET\_SESSION\_ID\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

#### Optional TLVs

None

### 3.71.2 Response - QMI\_CSD\_AS\_CMD\_GET\_SESSION\_ID\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Stream Handle	1.0	1.0
Session ID	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x12			1	Session ID
Length	4			2	
Value	→	uint32	qmi_csd_session_id	4	Current session ID.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.71.3 Description of QMI\_CSD\_AS\_CMD\_GET\_SESSION\_ID REQ/RESP

This command gets the session ID for an audio stream.

The response returns a valid session ID only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.



## 3.72 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_PCM

Configures the audio Rx stream to PCM format.

### CSD message ID

0x0067

### Version introduced

Major - 1, Minor - 0

### 3.72.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_PCM\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
PCM Stream Sample Rate	1.0	1.0
Channel Allocation	1.0	1.0
Bits Per Sample	1.0	1.0
PCM Sign Flag	1.0	1.0
PCM Interleaved Flag	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	PCM Stream Sample Rate
Length	4			2	
Value	→	enum	sample_rate	4	Sample rate for the PCM stream. Supported values: <ul style="list-style-type: none"> <li>• QMI_CSD_AS_FMT_SR_8K (8000) – 8000 samples per second</li> <li>• QMI_CSD_AS_FMT_SR_16K (16000) – 16000 samples per second</li> <li>• QMI_CSD_AS_FMT_SR_48K (48000) – 48000 samples per second</li> </ul>
Type	0x03			1	Channel Allocation
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	channels	4	Channel allocation: • 1 – Mono • 2 – Stereo
Type	0x04			1	Bits Per Sample
Length	2			2	
Value	→	uint16	bit_per_sample	2	Bits per sample setup.
Type	0x05			1	PCM Sign Flag
Length	4			2	
Value	→	enum	sign_flag	4	Sign flag for the PCM sample: • 0 – Unsigned • 1 – Signed
Type	0x06			1	PCM Interleaved Flag
Length	4			2	
Value	→	enum	interleave_flag	4	Interleaved flag for the PCM sample: • 0 – Noninterleaved • 1 – Interleaved

**Optional TLVs**

None

**3.72.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_PCM\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.72.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_PCM REQ/RESP

This command sets the audio Rx stream to PCM format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.73 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_ADPCM

Configures the audio Rx stream to Adaptive Differential Pulse Code Modulation (ADPCM) or raw Yamaha 4-bit ADPCM (YADPCM) format.

#### CSD message ID

0x0068

#### Version introduced

Major - 1, Minor - 0

#### 3.73.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_ADPCM\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Channel Configuration	1.0	1.0
Bits Per Sample	1.0	1.0
PCM Stream Sample Rate	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Channel Configuration
Length	4			2	
Value	→	enum	channels	4	Channel configuration: <ul style="list-style-type: none"> <li>• 1 – Mono</li> <li>• 2 – Stereo</li> </ul>
Type	0x03			1	Bits Per Sample
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	bit_per_sample	4	Bits per sample setup. Supported values: • QMI_CSD_AS_FMT_BPS_8K (8) – 8 bit per sample • QMI_CSD_AS_FMT_BPS_16K (16) – 16 bit per sample • QMI_CSD_AS_FMT_BPS_24K (24) – 24 bit per sample • QMI_CSD_AS_FMT_BPS_32K (32) – 32 bit per sample
Type	0x04			1	PCM Stream Sample Rate
Length	4			2	
Value	→	enum	sample_rate	4	Sample rate for the PCM stream. Supported values: • QMI_CSD_AS_FMT_SR_8K (8000) – 8000 samples per second • QMI_CSD_AS_FMT_SR_16K (16000) – 16000 samples per second • QMI_CSD_AS_FMT_SR_48K (48000) – 48000 samples per second

#### Optional TLVs

Name	Version introduced	Version last modified
ADPCM Block Size	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	ADPCM Block Size
Length	4			2	
Value	→	uint32	nBlockSize	4	Block size for the ADPCM. Not used by the YADPCM.

### 3.73.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_-ADPCM\_RESP

#### Message type

Response

Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.73.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX - ADPCM REQ/RESP

This command sets the audio Rx stream to ADPCM format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.74 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_MIDI

Configures the audio Rx stream to Musical Instrument Digital Interface (MIDI) format.

### CSD message ID

0x0069

### Version introduced

Major - 1, Minor - 0

### 3.74.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_MIDI\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
MIDI Mode	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	MIDI Mode
Length	4			2	
Value	→	enum	mode	4	MIDI mode. Supported values: <ul style="list-style-type: none"> <li>• QMI_CSD_AS_MIDI_MODE_0 (0) – All file formats not included in MIDI mode 1 and mode 2: MIDI, SMAF, and PMD.</li> <li>• QMI_CSD_AS_MIDI_MODE_1 (1) – MA2 or MA3 synthetic music mobile application format type.</li> <li>• QMI_CSD_AS_MIDI_MODE_2 (2) – MA5 synthetic music mobile application format type.</li> </ul>

**Optional TLVs**

None

**3.74.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_MIDI\_-RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing



### 3.74.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_MIDI\_REQ/RESP

This command sets the audio Rx stream to MIDI format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.75 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_WMAV9

Configures the audio Rx stream to Windows Media® Audio 9 format.

### CSD message ID

0x006A

### Version introduced

Major - 1, Minor - 0

### 3.75.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_WMAV9\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Windows Media Audio 9 Audio Stream Format	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Windows Media Audio 9 Audio Stream Format
Length	46			2	
Value	→	enum	tag	4	Windows Media Audio 9 tag field. Specifies the unique ID of the codec used to encode the audio data. Supported values: <ul style="list-style-type: none"> <li>• QMI_CSD_AS_WMA_TAG_STANDARD (0x161) – Standard</li> <li>• QMI_CSD_AS_WMA_TAG_PROFESSIONAL (0x162) – Professional</li> <li>• QMI_CSD_AS_WMA_TAG_LOSSLESS (0x163) – Lossless</li> </ul>

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	channels	4	Channel allocation: • 1 – Mono • 2 – Stereo
		enum	sample_rate	4	Sample rate for the Windows Media Audio stream. Supported values: • QMI_CSD_AS_FMT_SR_8K (8000) – 8000 samples per second • QMI_CSD_AS_FMT_SR_16K (16000) – 16000 samples per second • QMI_CSD_AS_FMT_SR_48K (48000) – 48000 samples per second
		uint32	byte_per_second	4	Average compressed stream rate in bytes per second.
		uint16	block_align	2	Alignment for the stream.
		uint16	valid_bit_per_sample	2	Valid bit width per sample.
		uint32	channel_mask	4	Channel mask.
		uint16	encode_opt	2	Encoding option as per Windows Media Audio 9.
		uint32	drc_peak_ref	4	Peak reference for dynamic range compression.
		uint32	drc_peak_target	4	Peak target for dynamic range compression.
		uint32	drc_average_ref	4	Average reference for dynamic range compression.
		uint32	drc_average_target	4	Average target for dynamic range compression.
		uint16	version_num	2	Version.
		uint16	virtual_pkt_len	2	Virtual packet length.

**Optional TLVs**

None

**3.75.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX - WMAV9\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

**3.75.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX - WMAV9 REQ/RESP**

This command sets the audio Rx stream to Windows Media Audio 9 format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.76 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_WMAV10

Configures the audio Rx stream to Windows Media Audio 10 Pro format.

### CSD message ID

0x006B

### Version introduced

Major - 1, Minor - 0

### 3.76.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_WMAV10\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Windows Media Audio 10 Pro Audio Stream Format	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Windows Media Audio 10 Pro Audio Stream Format
Length	52			2	
Value	→	enum	tag	4	Windows Media Audio 10 Pro tag field. Specifies the unique ID of the codec used to encode the audio data. Supported values: <ul style="list-style-type: none"> <li>• QMI_CSD_AS_WMA_TAG_STANDARD (0x161) – Standard</li> <li>• QMI_CSD_AS_WMA_TAG_PROFESSIONAL (0x162) – Professional</li> <li>• QMI_CSD_AS_WMA_TAG_LOSSLESS (0x163) – Lossless</li> </ul>

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	channels	4	Channel allocation. Supported values: <ul style="list-style-type: none"> <li>• 1 – Mono</li> <li>• 2 – Stereo</li> </ul>
		enum	sample_rate	4	Sample rate for the Windows Media Audio stream. Supported values: <ul style="list-style-type: none"> <li>• QMI_CSD_AS_FMT_SR_8K (8000) – 8000 samples per second</li> <li>• QMI_CSD_AS_FMT_SR_16K (16000) – 16000 samples per second</li> <li>• QMI_CSD_AS_FMT_SR_48K (48000) – 48000 samples per second</li> </ul>
		uint32	byte_per_second	4	Average compressed stream rate in bytes per second.
		uint16	block_align	2	Block alignment for the stream.
		uint16	valid_bit_per_sample	2	Valid bit width per sample.
		uint32	channel_mask	4	Channel mask.
		uint16	encode_opt	2	Encoding option per Windows Media Audio 10 Pro.
		uint16	adv_encode_opt	2	Advanced encode option per Windows Media Audio 10 Pro.
		uint32	adv_encode_opt2	4	Advanced encode option2 per Windows Media Audio 10 Pro.
		uint32	drc_peak_ref	4	Peak reference for dynamic range compression.
		uint32	drc_peak_target	4	Peak target for dynamic range compression.
		uint32	drc_average_ref	4	Average reference for dynamic range compression.
		uint32	drc_average_target	4	Average target for dynamic range compression.
		uint16	version_num	2	Version number.
		uint16	virtual_pkt_len	2	Virtual packet length.

**Optional TLVs**

None

**3.76.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX - WMAV10\_RESP****Message type**

Response

**Sender**

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.76.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX - WMAV10 REQ/RESP

This command sets the audio Rx stream to Windows Media Audio 10 Pro format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.77 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_AAC

Configures the audio Rx stream to AAC format.

### CSD message ID

0x006C

### Version introduced

Major - 1, Minor - 0

### 3.77.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_AAC\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
AAC Audio Stream Format Payload	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	AAC Audio Stream Format Payload
Length	27			2	
Value	→	enum	sample_rate	4	Sample rate for the AAC stream. Supported values: • QMI_CSD_AS_FMT_SR_8K (8000) – 8000 samples per second • QMI_CSD_AS_FMT_SR_16K (16000) – 16000 samples per second • QMI_CSD_AS_FMT_SR_48K (48000) – 48000 samples per second
		enum	channels	4	Channel configuration: • 1 – Mono • 2 – Stereo



Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	format	4	AAC format type: <ul style="list-style-type: none"> <li>• 0 – Audio Data Transport Stream (ADTS)</li> <li>• 1 – Low Overhead Audio Stream (LOAS)</li> <li>• 2 – Audio Data Interchange Format (ADIF)</li> <li>• 3 – Raw</li> </ul>
		enum	aud_obj_type	4	Audio object type. Supported values: <ul style="list-style-type: none"> <li>• 2 – Lossy Compression (LC) object type</li> <li>• 5 – Spectral Band Replication (SBR) object type</li> <li>• 22 – Bit-Sliced Arithmetic Coding (BSAC) object type</li> <li>• 29 – Parametric stereo AAC object type</li> </ul>
		uint16	ep_cfg	2	Indicates the configuration of the error protection scheme (0, 1, 2, 3). This information is retrieved from the MP4 header and is required by the DSP only when the value of Ahead Of Time (AOT) is 17. Currently, only epConfig=0 is supported.
		boolean	section_DRF	1	Indicates whether the Virtual CodeBook (VCB11) error resilience tool is used: <ul style="list-style-type: none"> <li>• 1 – VCB11 is used</li> <li>• 0 – VCB11 is not used</li> </ul> This information is retrieved from the MP4 header. <b>Note:</b> This field must be zero if (AOT!=17).
		boolean	scale_factor_DRF	1	Indicates whether the Reversible Variable Length Coding (RVLC) error resilience tool is used: <ul style="list-style-type: none"> <li>• 1 – RVLC is used</li> <li>• 0 – RVLC is not used</li> </ul> This information is retrieved from the MP4 header. <b>Note:</b> This field must be zero if (AOT!=17).

Field	Field value	Field type	Parameter	Size (byte)	Description
		boolean	spectral_DRF	1	Indicates whether the Huffman Codeword Reordering (HCR) error resilience tool is used: <ul style="list-style-type: none"> <li>• 1 – HCR is used</li> <li>• 0 – HCR is not used</li> </ul> This information is retrieved from the MP4 header. <b>Note:</b> This field must be zero if (AOT!=17).
		boolean	sbr_on_flag	1	Enables/disables spectral band replication: <ul style="list-style-type: none"> <li>• 1 – Turns on SBR if present in the bitstream</li> <li>• 0 – Turns off SBR</li> </ul>
		boolean	sbr_ps_flag	1	Enables/disables the parametric stereo AAC flag. <ul style="list-style-type: none"> <li>• 1 – Turns on PS if present in the bitstream</li> <li>• 0 – Turns off PS</li> </ul>
		uint32	bit_rate	4	Bitrate.

**Optional TLVs**

None

**3.77.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_AAC\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.77.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_AAC REQ/RESP

This command sets the audio Rx stream to AAC format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.78 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_G711

Configures the audio Rx stream to G.711 format.

### CSD message ID

0x006D

### Version introduced

Major - 1, Minor - 0

### 3.78.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_G711\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
G.711 Stream Sample Rate	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	G.711 Stream Sample Rate
Length	4			2	
Value	→	enum	sample_rate	4	Sample rate for the G.711 stream. Supported value: • QMI_CSD_AS_FMT_SR_8K (8000) – 8000 samples per second

#### Optional TLVs

None

### 3.78.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_G711\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.78.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_G711\_REQ/RESP

This command sets the audio Rx stream to G.711 format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.79 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_FLAC

Configures the audio Rx stream to Free Lossless Audio Codec (FLAC) format.

### CSD message ID

0x006E

### Version introduced

Major - 1, Minor - 0

### 3.79.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_FLAC\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
FLAC Audio Stream Format Payload	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	FLAC Audio Stream Format Payload
Length	37			2	
Value	→	boolean	strm_info_present	1	Specifies whether METADAT_BLOCK_STREAMINFO is parsed successfully. When bStrmInfoPresent is set to: • 1 – METADAT_BLOCK_STREAMINFO is successfully parsed. • 0 – FLAC decoder tries to get the stream information from the frame header.
		uint16	min_blk_size	2	Minimum block size in samples used in the stream.

Field	Field value	Field type	Parameter	Size (byte)	Description
		uint16	max_blk_size	2	Maximum block size in samples used in the stream. When minBlkSize == maxBlkSize, a fixed block size stream is implied.
		uint16	channels	2	Number of channels. FLAC supports 1 to 8 channels.
		uint16	sample_size	2	Bits per sample. FLAC supports 4 to 32 bits per sample.
		uint32	sample_rate	4	Sample rate for FLAC.
		uint32	min_frame_size	4	Minimum frame size in bytes used in the stream. A value of zero means the value is not known.
		uint32	max_frame_size	4	Maximum frame size in bytes used in the stream. A value of zero means the value is not known.
		uint16	md5_sum	16	MD5 Message-Digest Algorithm signature of the unencoded audio data. This allows the decoder to determine whether an error exists in the audio data even when the error does not result in an invalid bitstream.

**Optional TLVs**

None

**3.79.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_FLAC\_-RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.79.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_FLAC REQ/RESP

This command sets the audio Rx stream to FLAC format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.



## 3.80 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_VORBIS

Configures the audio Rx stream to Vorbis format.

### CSD message ID

0x006F

### Version introduced

Major - 1, Minor - 0

### 3.80.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_VORBIS\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Vorbis Sample Rate	1.0	1.0
Vorbis Stream Channels	1.0	1.0
Encoded Data Nominal Bitrate	1.0	1.0
Encoded Data Minimum Bitrate	1.0	1.0
Encoded Data Maximum Bitrate	1.0	1.0
PCM Width Resolution	1.0	1.0
Bit Stream Format	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Vorbis Sample Rate
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	sample_rate	4	Sample rate for the Vorbis stream. Supported values: <ul style="list-style-type: none"> <li>• QMI_CSD_AS_VORBIS_SR_48000 (48000) – 48000 samples per second</li> <li>• QMI_CSD_AS_VORBIS_SR_44100 (44100) – 44100 samples per second</li> <li>• QMI_CSD_AS_VORBIS_SR_32000 (32000) – 32000 samples per second</li> <li>• QMI_CSD_AS_VORBIS_SR_24000 (24000) – 24000 samples per second</li> <li>• QMI_CSD_AS_VORBIS_SR_22050 (22050) – 22050 samples per second</li> <li>• QMI_CSD_AS_VORBIS_SR_16000 (16000) – 16000 samples per second</li> <li>• QMI_CSD_AS_VORBIS_SR_12000 (12000) – 12000 samples per second</li> <li>• QMI_CSD_AS_VORBIS_SR_11025 (11025) – 11025 samples per second</li> <li>• QMI_CSD_AS_VORBIS_SR_8000 (8000) – 8000 samples per second</li> </ul>
Type	0x03			1	Vorbis Stream Channels
Length	4			2	
Value	→	enum	channels	4	Number of channels encoded in the Vorbis stream. Supported values: <ul style="list-style-type: none"> <li>• 1 – Mono</li> <li>• 2 – Stereo</li> </ul>
Type	0x04			1	Encoded Data Nominal Bitrate
Length	4			2	
Value	→	uint32	bit_rate	4	Nominal bitrate of the encoded data.
Type	0x05			1	Encoded Data Minimum Bitrate
Length	4			2	
Value	→	uint32	min_bit_rate	4	Minimum bitrate of the encoded data.
Type	0x06			1	Encoded Data Maximum Bitrate
Length	4			2	
Value	→	uint32	max_bit_rate	4	Maximum bitrate of the encoded data.
Type	0x07			1	PCM Width Resolution
Length	4			2	
Value	→	enum	bits_per_sample	4	PCM width resolution to be played by the decoder.
Type	0x08			1	Bit Stream Format
Length	4			2	
Value	→	enum	bit_stream_fmt	4	Bit stream format: <ul style="list-style-type: none"> <li>• 0 – Raw bitstream (default)</li> <li>• 1 – Transcoded bitstream</li> </ul>

**Optional TLVs**

None

**3.80.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX - VORBIS\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.80.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX - VORBIS REQ/RESP

This command sets the audio Rx stream to Vorbis format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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2016-05-16 00:15:01 PDT  
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## 3.81 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_AMRWBPLUS

Configures the audio Rx stream to Extended Adaptive Multirate Wideband (AMR-WB+) format.

### CSD message ID

0x0070

### Version introduced

Major - 1, Minor - 0

### 3.81.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX\_AMRWBPLUS\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Number of Channels	1.0	1.0
AMR Band Mode	1.0	1.0
AMR DTX Mode	1.0	1.0
AMR Frame Format	1.0	1.0
AMR Line Spectral Frequency	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Number of Channels
Length	4			2	
Value	→	enum	channels	4	Number of channels. Supported values: <ul style="list-style-type: none"> <li>• 1 – Mono</li> <li>• 2 – Stereo</li> </ul>
Type	0x03			1	AMR Band Mode
Length	4			2	
Value	→	enum	amr_band_mode	4	AMR band mode value. Supported values: 0 to 47. See Appendix F.
Type	0x04			1	AMR DTX Mode
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	amr_dtx_mode	4	AMR DTX mode value. Currently only 0 is supported.
Type	0x05			1	AMR Frame Format
Length	4			2	
Value	→	enum	amr_frame_fmt	4	AMR frame format value. See Appendix G.
Type	0x06			1	AMR Line Spectral Frequency
Length	4			2	
Value	→	enum	amr_lsf_idx	4	AMR Line Spectral Frequency (LSF) index value. Supported values: 0 to 13. See Appendix H.

### Optional TLVs

None

## 3.81.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX - AMRWBPLUS\_RESP

### Message type

Response

### Sender

Service

### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

### Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

**3.81.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_RX - AMRWBPLUS REQ/RESP**

This command sets the audio Rx stream to AMR-WB+ format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.82 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_PCM

Configures the audio Tx stream to PCM format.

### CSD message ID

0x0071

### Version introduced

Major - 1, Minor - 0

### 3.82.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_PCM\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Real Sample Rate	1.0	1.0
PCM Channel Configuration	1.0	1.0
Real Bit Per Sample Number	1.0	1.0
PCM Sign Flag	1.0	1.0
PCM Interleave Flag	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Real Sample Rate
Length	4			2	
Value	→	uint32	sample_rate	4	Real sample rate.
Type	0x03			1	PCM Channel Configuration
Length	4			2	
Value	→	enum	channels	4	Channel configuration for the PCM: • 1 – Mono • 2 – Stereo
Type	0x04			1	Real Bit Per Sample Number
Length	2			2	
Value	→	uint16	bit_per_sample	2	Real bit per sample number.



Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x05			1	PCM Sign Flag
Length	4			2	
Value	→	enum	sign_flag	4	Sign flag for the PCM sample: • 0 – Unsigned • 1 – Signed
Type	0x06			1	PCM Interleave Flag
Length	4			2	
Value	→	enum	interleave_flag	4	Interleave flag for the PCM sample: • 0 – Noninterleaved • 1 – Interleaved

**Optional TLVs**

None

**3.82.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_PCM\_-RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

**3.82.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_PCM REQ/RESP**

This command sets the audio Tx stream to PCM format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.83 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_AAC

Configures the audio Tx stream to Advanced Audio Codec (AAC) format.

#### CSD message ID

0x0072

#### Version introduced

Major - 1, Minor - 0

#### 3.83.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_AAC\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
AAC Stream Sample Rate	1.0	1.0
AAC Channel Configuration	1.0	1.0
AAC Format	1.0	1.0
AAC Stream Bitrate	1.0	1.0
AAC Encode Mode	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	AAC Stream Sample Rate
Length	4			2	
Value	→	uint32	sample_rate	4	Sample rate for the AAC stream.
Type	0x03			1	AAC Channel Configuration
Length	4			2	
Value	→	enum	channels	4	Channel configuration for the AAC: <ul style="list-style-type: none"> <li>• 1 – Mono</li> <li>• 2 – Stereo</li> </ul>
Type	0x04			1	AAC Format
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	format	4	AAC format. Supported values: <ul style="list-style-type: none"> <li>• 0 – Audio data transport stream AAC format</li> <li>• 1 – Low overhead audio stream AAC format</li> <li>• 2 – Audio data interchange AAC format</li> <li>• 3 – Raw AAC format</li> </ul>
Type	0x05			1	AAC Stream Bitrate
Length	4			2	
Value	→	uint32	bit_rate	4	Bitrate of the AAC stream.
Type	0x06			1	AAC Encode Mode
Length	4			2	
Value	→	enum	encoder_mode	4	AAC encoder mode. Supported values: <ul style="list-style-type: none"> <li>• 2 – Lossy compression object type</li> <li>• 5 – Spectral band replication object type</li> <li>• 22 – Bit-sliced arithmetic coding object type</li> <li>• 29 – Parametric stereo AAC object type</li> </ul>

**Optional TLVs**

None

**3.83.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_AAC\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.83.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_AAC REQ/RESP

This command sets the audio Tx stream to AAC format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.84 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_G711

Configures the audio Tx stream to G.711 format.

### CSD message ID

0x0073

### Version introduced

Major - 1, Minor - 0

### 3.84.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_G711\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
G.711 Sample Rate	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	G.711 Sample Rate
Length	4			2	
Value	→	enum	sample_rate	4	Sample rate for G.711. Supported values: <ul style="list-style-type: none"> <li>• QMI_CSD_AS_FMT_SR_8K (8000) – 8000 samples per second</li> <li>• QMI_CSD_AS_FMT_SR_16K (16000) – 16000 samples per second</li> <li>• QMI_CSD_AS_FMT_SR_48K (48000) – 48000 samples per second</li> </ul>

#### Optional TLVs

None

### 3.84.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_G711\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.84.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_G711\_REQ/RESP

This command sets the audio Tx stream to G.711 format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.85 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_AMRNB

Configures the audio Tx stream to AMR-NB format.

### CSD message ID

0x0074

### Version introduced

Major - 1, Minor - 0

### 3.85.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX - AMRNB\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Audio Stream Encode Mode	1.0	1.0
Audio Stream DTX Mode	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Audio Stream Encode Mode
Length	4			2	
Value	→	enum	encoder_mode	4	Encoder mode for the audio stream. Supported values for AMR_NB: <ul style="list-style-type: none"> <li>• 0 – 4750 bps</li> <li>• 1 – 5150 bps</li> <li>• 2 – 5900 bps</li> <li>• 3 – 6700 bps</li> <li>• 4 – 7400 bps</li> <li>• 5 – 7950 bps</li> <li>• 6 – 10200 bps</li> <li>• 7 – 12220 bps</li> </ul>
Type	0x03			1	Audio Stream DTX Mode
Length	4			2	



Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	dtx_mode	4	Discontinuous Transmission mode. Supported values: <ul style="list-style-type: none"> <li>• 0 – Disables DTX</li> <li>• 1 – Enables voice activity detector 1</li> <li>• 2 – Enables voice activity detector 2</li> <li>• 3 – Codec selects automatically</li> <li>• 4 – DTX uses EFR instead of AMR codec standard</li> </ul>

**Optional TLVs**

None

### 3.85.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_-AMRNB\_RESP

**Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

**3.85.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX - AMRNB REQ/RESP**

This command sets the audio Tx stream to AMR-NB format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.86 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_AMRWB

Configures the audio Tx stream to AMR-WB format.

### CSD message ID

0x0075

### Version introduced

Major - 1, Minor - 0

### 3.86.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX - AMRWB\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Audio Stream Encode Mode	1.0	1.0
Audio Stream DTX Mode	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Audio Stream Encode Mode
Length	4			2	
Value	→	enum	encoder_mode	4	Encoder mode for the audio stream. Supported values for AMR_WB: <ul style="list-style-type: none"> <li>• 0 – 6600 bps</li> <li>• 1 – 8850 bps</li> <li>• 2 – 12650 bps</li> <li>• 3 – 14250 bps</li> <li>• 4 – 15850 bps</li> <li>• 5 – 18250 bps</li> <li>• 6 – 19850 bps</li> <li>• 7 – 23050 bps</li> <li>• 8 – 23850 bps</li> </ul>

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x03			1	Audio Stream DTX Mode
Length	4			2	
Value	→	enum	dtx_mode	4	Discontinuous Transmission mode. Supported values: <ul style="list-style-type: none"> <li>• 0 – Disables DTX</li> <li>• 1 – Enables voice activity detector 1</li> <li>• 2 – Enables voice activity detector 2</li> <li>• 3 – Codec selects automatically</li> <li>• 4 – DTX uses EFR instead of the AMR codec standard</li> </ul>

**Optional TLVs**

None

### 3.86.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX - AMRWB\_RESP

**Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

**3.86.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX - AMRWB REQ/RESP**

This command sets the audio Tx stream to AMR-WB format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.87 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_QCELP13K

Configures the audio Tx stream to QCELP13K format.

#### CSD message ID

0x0076

#### Version introduced

Major - 1, Minor - 0

#### 3.87.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX - QCELP13K\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Minimum CDMA Encoded Frame Rate	1.0	1.0
Maximum CDMA Encoded Frame Rate	1.0	1.0
Reduced CDMA Encoded Frame Rate	1.0	1.0
Rate Modulation	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Minimum CDMA Encoded Frame Rate
Length	4			2	
Value	→	enum	min_frame_rate	4	Minimum CDMA encoded frame rate. Supported values: • 1 – Eighth rate • 2 – Quarter rate • 3 – Half rate • 4 – Full rate
Type	0x03			1	Maximum CDMA Encoded Frame Rate
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	max_frame_rate	4	Maximum CDMA encoded frame rate. Supported values: <ul style="list-style-type: none"> <li>• 1 – Eighth rate</li> <li>• 2 – Quarter rate</li> <li>• 3 – Half rate</li> <li>• 4 – Full rate</li> </ul>
Type	0x04			1	Reduced CDMA Encoded Frame Rate
Length	4			2	
Value	→	enum	reduce_rate_cmd	4	Reduced CDMA encoded frame rate. Supported values: <ul style="list-style-type: none"> <li>• 0 – 14.4 kbps</li> <li>• 1 – 12.2 kbps</li> <li>• 2 – 11.2 kbps</li> <li>• 3 – 9 kbps</li> <li>• 4 – 7.2 kbps</li> </ul>
Type	0x05			1	Rate Modulation
Length	2			2	
Value	→	uint16	rate_mod_cmd	2	Rate modulation. Supported values: <ul style="list-style-type: none"> <li>• Bit 0: <ul style="list-style-type: none"> <li>– 1 – Rate control is enabled</li> </ul> </li> <li>• Bit 1: <ul style="list-style-type: none"> <li>– 1 – Limits the maximum number of consecutive full rate frames with the number supplied in bits 2 to 9</li> <li>– 0 – Forces the minimum number of non-full rate frames in between two full rate frames to the number supplied in bits 2 to 9</li> </ul> </li> </ul> <p><b>Note:</b> In both cases, half rate is substituted for full rate when necessary.</p> <ul style="list-style-type: none"> <li>• Bits 9 to 2 – Number of frames</li> <li>• Bits 15 to 10 – Reserved and set to 0</li> </ul>

**Optional TLVs**

None

**3.87.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_-QCELP13K\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.87.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX - QCELP13K REQ/RESP

This command sets the audio Tx stream to QCELP13K format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.



## 3.88 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_EVRC

Configures the audio Tx stream to Enhanced Variable Rate Codec (EVRC) format.

### CSD message ID

0x0077

### Version introduced

Major - 1, Minor - 0

### 3.88.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_EVRC\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Bitrate Control Command	1.0	1.0
Minimum CDMA Encoded Frame Rate	1.0	1.0
Maximum CDMA Encoded Frame Rate	1.0	1.0
DTX Mode Enable Flag	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Bitrate Control Command
Length	2			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint16	bit_rate_ctrl	2	Bitrate control command. For EVRC, this is used as the average bitrate control command. Supported values: <ul style="list-style-type: none"> <li>• Bit 0:               <ul style="list-style-type: none"> <li>– 0 – Rate control is disabled</li> <li>– 1 – Rate control is enabled</li> </ul> </li> <li>• Bit 1:               <ul style="list-style-type: none"> <li>– 1 – Limits the maximum number of consecutive full rate frames with the number supplied in bits 2 to 9</li> <li>– 0 – Forces the minimum number of non-full rate frames in between two full rate frames to the number supplied in bits 2 to 9</li> </ul> </li> <li>• Bits 9 to 2 – Number of frames</li> <li>• Bits 15 to 10 – Reserved and set to 0</li> </ul>
Type	0x03			1	Minimum CDMA Encoded Frame Rate
Length	4			2	
Value	→	enum	min_frame_rate	4	Minimum CDMA encoded frame rate. Supported values: <ul style="list-style-type: none"> <li>• 1 – Eighth rate</li> <li>• 2 – Quarter rate</li> <li>• 3 – Half rate</li> <li>• 4 – Full rate</li> </ul>
Type	0x04			1	Maximum CDMA Encoded Frame Rate
Length	4			2	
Value	→	enum	max_frame_rate	4	Maximum CDMA encoded frame rate. Supported values: <ul style="list-style-type: none"> <li>• 1 – Eighth rate</li> <li>• 2 – Quarter rate</li> <li>• 3 – Half rate</li> <li>• 4 – Full rate</li> </ul>
Type	0x05			1	DTX Mode Enable Flag
Length	4			2	
Value	→	enum	dtx_mode	4	DTX mode enable flag. Supported values: <ul style="list-style-type: none"> <li>• 0 – Disable</li> <li>• &gt; 0 – Enable</li> </ul>

### Optional TLVs

None

### 3.88.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_EVRC\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.88.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_EVRC REQ/RESP

This command sets the audio Tx stream to EVRC format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.89 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_EVRCB

Configures the audio Tx stream to EVRCB format.

#### CSD message ID

0x0078

#### Version introduced

Major - 1, Minor - 0

#### 3.89.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_EVRCB - REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Bitrate Control	1.0	1.0
Minimum CDMA Encoded Frame Rate	1.0	1.0
Maximum CDMA Encoded Frame Rate	1.0	1.0
DTX Mode Enable Flag	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Bitrate Control
Length	4			2	
Value	→	enum	bit_rate_ctrl	4	Bitrate control command. For EVRC-B, uses the predefined values: <ul style="list-style-type: none"> <li>• 0 – 9.3 kbps</li> <li>• 1 – 8.5 kbps</li> <li>• 2 – 7.5 kbps</li> <li>• 3 – 7.0 kbps</li> <li>• 4 – 6.6 kbps</li> <li>• 5 – 6.2 kbps</li> <li>• 6 – 5.8 kbps</li> <li>• 7 – 4.8 kbps</li> </ul>

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x03			1	Minimum CDMA Encoded Frame Rate
Length	4			2	
Value	→	enum	min_frame_rate	4	Minimum CDMA encoded frame rate. Supported values: <ul style="list-style-type: none"> <li>• 1 – Eighth rate</li> <li>• 2 – Quarter rate</li> <li>• 3 – Half rate</li> <li>• 4 – Full rate</li> </ul>
Type	0x04			1	Maximum CDMA Encoded Frame Rate
Length	4			2	
Value	→	enum	max_frame_rate	4	Maximum CDMA encoded frame rate. Supported values: <ul style="list-style-type: none"> <li>• 1 – Eighth rate</li> <li>• 2 – Quarter rate</li> <li>• 3 – Half rate</li> <li>• 4 – Full rate</li> </ul>
Type	0x05			1	DTX Mode Enable Flag
Length	4			2	
Value	→	enum	dtx_mode	4	DTX mode enable flag. Supported values: <ul style="list-style-type: none"> <li>• 0 – Disable</li> <li>• &gt; 0 – Enable</li> </ul>

**Optional TLVs**

None

**3.89.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_EVRCB - RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.89.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX - EVRCB REQ/RESP

This command sets the audio Tx stream to EVRCB format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.90 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_EVRCWB

Configures the audio Tx stream to EVRCWB format.

### CSD message ID

0x0079

### Version introduced

Major - 1, Minor - 0

### 3.90.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX - EVRCWB\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Bitrate Control	1.0	1.0
Minimum CDMA Encoded Frame Rate	1.0	1.0
Maximum CDMA Encoded Frame Rate	1.0	1.0
DTX Mode	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Bitrate Control
Length	4			2	
Value	→	enum	bit_rate_ctrl	4	Bitrate control. For EVRC-WB, uses the predefined values: <ul style="list-style-type: none"> <li>• 0 – 9.3 kbps</li> <li>• 4 – 6.6 kbps</li> <li>• 7 – 4.8 kbps</li> </ul>
Type	0x03			1	Minimum CDMA Encoded Frame Rate
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	min_frame_rate	4	Minimum CDMA encoded frame rate. Supported values: • 1 – Eighth rate • 2 – Quarter rate • 3 – Half rate • 4 – Full rate
Type	0x04			1	Maximum CDMA Encoded Frame Rate
Length	4			2	
Value	→	enum	max_frame_rate	4	Maximum CDMA encoded frame rate. Supported values: • 1 – Eighth rate • 2 – Quarter rate • 3 – Half rate • 4 – Full rate
Type	0x05			1	DTX Mode
Length	4			2	
Value	→	enum	dtx_mode	4	DTX mode. Supported values: • 0 – Disable • > 0 – Enable

**Optional TLVs**

None

**3.90.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX - EVRCWB\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0



Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.90.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX - EVRCWB REQ/RESP

This command sets the audio Tx stream to EVRC-WB format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.91 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_SBC

Configures the audio Tx stream to Subband Coding (SBC) format.

### CSD message ID

0x007A

### Version introduced

Major - 1, Minor - 0

### 3.91.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_SBC\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Number of Subbands	1.0	1.0
Block Length	1.0	1.0
Channel Mode	1.0	1.0
SBC Allocation Mode	1.0	1.0
Bits Per Second	1.0	1.0
Sample Rate	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Number of Subbands
Length	4			2	
Value	→	enum	sub_bands	4	Number of subbands. Supported values: 4 or 8.
Type	0x03			1	Block Length
Length	4			2	
Value	→	enum	block_len	4	Block length. Supported values: 4, 8, 12, or 16.
Type	0x04			1	Channel Mode
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	channel_mode	4	Channel Allocation mode for SBC. Supported values: • 1 – Mono channel. • 2 – Stereo channel. • 8 – Dual/Mono mode. • 9 – Joint Stereo mode.
Type	0x05			1	SBC Allocation Mode
Length	4			2	
Value	→	enum	alloc_method	4	SBC Allocation mode. Supported values: • 0 – Loudness • 1 – Signal-to-Noise Ratio (SNR)
Type	0x06			1	Bits Per Second
Length	4			2	
Value	→	uint32	bit_rate	4	Bits per second.
Type	0x07			1	Sample Rate
Length	4			2	
Value	→	uint32	sample_rate	4	Sample rate. Supported values: • 0 – Native mode • Specify a sample rate

**Optional TLVs**

None

**3.91.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_SBC\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.91.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_FMT\_TX\_SBC REQ/RESP

This command sets the audio Tx stream to SBC format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.92 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_EOS

Sends an End Of Stream (EOS) indication for the audio stream.

### CSD message ID

0x007B

### Version introduced

Major - 1, Minor - 0

### 3.92.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_EOS\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

#### Optional TLVs

None

### 3.92.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_EOS\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.92.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_EOS REQ/RESP

This command sends an EOS indication for the audio stream.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.93 QMI\_CSD\_AS\_EVT\_EOS\_IND

Indicates the End of Stream event information (i.e, all data has been rendered) to the stream client. This indication is enabled when the stream is opened and is disabled when the stream is closed.

#### CSD message ID

0x007B

#### Version introduced

Major - 1, Minor - 0

#### 3.93.1 Indication - QMI\_CSD\_AS\_EVT\_EOS\_IND

##### Message type

Indication

##### Sender

Service

##### Scope

Unicast

##### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

##### Optional TLVs

None

#### 3.93.2 Description of QMI\_CSD\_AS\_EVT\_EOS\_IND

This indication communicates to the stream client that all the data has been rendered. The indication is enabled when the stream is opened and is disabled when the stream is closed.

## 3.94 QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_MASTER\_GAIN

Sets the master gain.

### CSD message ID

0x007C

### Version introduced

Major - 1, Minor - 0

### 3.94.1 Request - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_MASTER\_GAIN\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Master Gain Step Level	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Master Gain Step Level
Length	2			2	
Value	→	uint16	master_gain_step	2	Step level of the master gain. One of the values within the range of values returned by QMI_CSD_AS_CMD_GET_VOL_LEVELS_RESP.

#### Optional TLVs

None



### 3.94.2 Response - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_MASTER\_-GAIN\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.94.3 Description of QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_MASTER\_-GAIN REQ/RESP

This command sets the master gain.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.95 QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_STEREO\_GAIN

Sets the stereo gain.

### CSD message ID

0x007D

### Version introduced

Major - 1, Minor - 0

### 3.95.1 Request - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_STEREO\_GAIN\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Left Channel Gain Step Level	1.0	1.0
Right Channel Gain Step Level	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Left Channel Gain Step Level
Length	2			2	
Value	→	uint16	left_ch_gain_step	2	Step level of the left channel gain. One of the values within the range of values returned by QMI_CSD_AS_CMD_GET_VOL_LEVELS_REQ.
Type	0x03			1	Right Channel Gain Step Level
Length	2			2	
Value	→	uint16	right_ch_gain_step	2	Step level of the right channel gain. One of the values within the range of values returned by QMI_CSD_AS_CMD_GET_VOL_LEVELS_REQ.

**Optional TLVs**

None

**3.95.2 Response - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_STEREO\_-GAIN\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.95.3 Description of QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_STEREO\_-GAIN REQ/RESP

This command sets the stereo gain.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.96 QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_MULTICHANNEL\_-GAIN

Sets the multichannel gain.

### CSD message ID

0x007E

### Version introduced

Major - 1, Minor - 0

### 3.96.1 Request - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_-MULTICHANNEL\_GAIN\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Multichannel Gain Volume Levels	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Multichannel Gain Volume Levels
Length	Var			2	
Value	→	uint8	multi_ch_gain_len	1	Number of sets of the following elements: • ch_type • gain_idx

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	ch_type	4	Channel type. Supported values: <ul style="list-style-type: none"> <li>• 1 – Left channel type</li> <li>• 2 – Right channel type</li> <li>• 3 – Center channel type</li> <li>• 4 – Left surround channel type</li> <li>• 5 – Right surround channel type</li> <li>• 6 – Left back channel type</li> <li>• 7 – Right back channel type</li> <li>• 8 – Subwoofer channel type</li> </ul>
		uint16	gain_idx	2	One of the out-of-range indices returned in the QMI_CSD_AS_CMD_GET_VOL_LEVELS_RESP command.

**Optional TLVs**

None

### 3.96.2 Response - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_MULTICHANNEL\_GAIN\_RESP

**Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

**3.96.3 Description of QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_-MULTICHANNEL\_GAIN REQ/RESP**

This command sets the multichannel gain for the audio stream.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.97 QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_MUTE

Sets the mute/unmute control.

### CSD message ID

0x007F

### Version introduced

Major - 1, Minor - 0

### 3.97.1 Request - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_MUTE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Mute Mode	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Mute Mode
Length	4			2	
Value	→	enum	mute	4	Mute disable/enable: • 0 – Unmute • 1 – Mute

#### Optional TLVs

None

### 3.97.2 Response - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_MUTE\_RESP

#### Message type

Response



**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.97.3 Description of QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_VOL\_MUTE REQ/RESP

This command sets the mute/unmute control.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.98 QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_EQ\_ENABLE

Enables, configures, or disables the equalizer for the audio stream.

### CSD message ID

0x0080

### Version introduced

Major - 1, Minor - 0

### 3.98.1 Request - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_EQ\_ENABLE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

#### Optional TLVs

When the QMI\_CSD\_AUD\_PP\_EQ\_ENABLE command is set, the qmi\_csd\_aud\_pp\_eq\_subband\_t structure is required for equalizer subband configuration. This optional TLV is not required when disabling the equalizer.

Name	Version introduced	Version last modified
Equalizer Subband Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Equalizer Subband Configuration
Length	Var			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	eq_bands_len	1	Number of sets of the following elements: <ul style="list-style-type: none"> <li>• band_idx</li> <li>• filter_type</li> <li>• center_freq_in_hz</li> <li>• filter_gain</li> <li>• lq_factor</li> </ul>
		uint32	band_idx	4	Band index.
		enum	filter_type	4	Equalizer filter type. Supported values are: <ul style="list-style-type: none"> <li>• 0 – Unknown</li> <li>• 1 – Bass boost</li> <li>• 2 – Bass cut</li> <li>• 3 – Treble boost</li> <li>• 4 – Treble cut</li> <li>• 5 – Band boost</li> <li>• 6 – Band cut</li> </ul>
		uint32	center_freq_in_hz	4	Filter band center frequency.
		int32	filter_gain	4	Filter band initial gain in dB. Supported values: +12 dB to -12 dB with 1 dB increments.
		int32	lq_factor	4	Filter band quality factor expressed as a q-8 number; a fixed point number with a q factor of 8 (for example, 3000/(2 <sup>8</sup> )).

### 3.98.2 Response - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_EQ\_ENABLE\_RESP

#### Message type

Response

Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.98.3 Description of QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_EQ\_ENABLE REQ/RESP

This command enables, configures, or disables the equalizer for the audio stream.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.99 QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_QCPR

Enables, configures, or disables Qconcert Plus Reverb (QCPR) for the audio stream.

#### CSD message ID

0x0081

#### Version introduced

Major - 1, Minor - 0

#### 3.99.1 Request - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_QCPR\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

##### Optional TLVs

When the QMI\_CSD\_AUD\_PP\_QCPR\_ENABLE flag is set, the qmi\_csd\_aud\_pp\_qcpr\_config\_t structure is required for QCPR configuration. This optional TLV is not required when disabling QCPR.

Name	Version introduced	Version last modified
QCPR Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	QCPR Configuration
Length	8			2	
Value	→	enum	preset	4	Preset value for QCPR.
		enum	strength	4	Strength value for QCPR.

### 3.99.2 Response - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_QCPR\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.99.3 Description of QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_QCPR REQ/RESP

This command enables, configures, or disables the QCPR for the audio stream.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.100 QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_SPA

Enables, configures, or disables the Spectrum Analyzer (SPA) for the audio stream.

### CSD message ID

0x0082

### Version introduced

Major - 1, Minor - 0

### 3.100.1 Request - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_SPA\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

#### Optional TLVs

When the QMI\_CSD\_AUD\_PP\_SPA\_ENABLE flag is set, the qmi\_csd\_aud\_pp\_spa\_config\_t structure is required for SPA configuration. This optional TLV is not required when disabling the SPA.

Name	Version introduced	Version last modified
SPA Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	SPA Configuration
Length	8			2	
Value	→	uint32	sample_interval	4	Sample interval in terms of number of samples. Supported values: $\geq 512$ samples.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	sample_points	4	Specifies the sample points for the SPA filter. Supported values: 32, 64, 128, and 256.

### 3.100.2 Response - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_SPA\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing



### 3.100.3 Description of QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_SPA REQ/RESP

This command enables, configures, or disables the SPA for the audio stream.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.101 QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_TSM

Enables, configures, or disables Time Scale Modification (TSM) for the audio stream.

### CSD message ID

0x0083

### Version introduced

Major - 1, Minor - 0

### 3.101.1 Request - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_TSM\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

#### Optional TLVs

When the QMI\_CSD\_AUD\_PP\_TSM\_ENABLE flag is set, the time scale modification factor is required for TSM configuration. This optional TLV is not required when disabling TSM.

Name	Version introduced	Version last modified
TSM Factor	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	TSM Factor
Length	2			2	
Value	→	uint16	tsm_factor	2	Time scale modification factor in Q11. Supported values: 1024 to 16384.

### 3.101.2 Response - QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_TSM\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.101.3 Description of QMI\_CSD\_AS\_CMD\_CONFIG\_PP\_TSM REQ/RESP

This command enables, configures, or disables TSM for the audio stream.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.102 QMI\_CSD\_AS\_CMD\_GET\_SPA\_DATA

Gets the spectrum-analyzed data for the audio stream from the driver. Only Asynchronous mode is supported.

### CSD message ID

0x0084

### Version introduced

Major - 1, Minor - 0

### 3.102.1 Request - QMI\_CSD\_AS\_CMD\_GET\_SPA\_DATA\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

#### Optional TLVs

None

### 3.102.2 Response - QMI\_CSD\_AS\_CMD\_GET\_SPA\_DATA\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

SPA data is provided in QMI\_CSD\_AS\_EVT\_SPA\_BUF\_READY\_IND.

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.102.3 Description of QMI\_CSD\_AS\_CMD\_GET\_SPA\_DATA REQ/RESP

This command gets the spectrum-analyzed data for the audio stream from the driver. Only Asynchronous mode is supported.

The actual spectrum analysis data is ready with the QMI\_CSD\_AS\_EVT\_SPA\_BUF\_READY\_IND indication message.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.103 QMI\_CSD\_AS\_EVT\_SPA\_BUF\_READY\_IND

Indicates the asynchronous spectrum-analyzed buffer production information to the stream client. The driver publishes EVT Done once the driver is done producing the buffer with spectrum-analyzed data.

#### CSD message ID

0x0084

#### Version introduced

Major - 1, Minor - 0

#### 3.103.1 Indication - QMI\_CSD\_AS\_EVT\_SPA\_BUF\_READY\_IND

##### Message type

Indication

##### Sender

Service

##### Scope

Unicast

##### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
SPA Data Buffer Information	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	SPA Data Buffer Information
Length	Var			2	
Value	→	uint16	spa_data_len	2	Number of sets of the following elements: • spa_data
		uint8	spa_data	Var	For detailed SPA data buffer format, refer to <a href="#">80-N4404-1</a> .

##### Optional TLVs

None

### 3.103.2 Description of QMI\_CSD\_AS\_EVT\_SPA\_BUF\_READY\_IND

This indication communicates the asynchronous spectrum-analyzed buffer production information to the stream client. The driver publishes EVT Done once the driver is done producing the buffer with spectrum-analyzed data.

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### 3.104 QMI\_CSD\_AS\_CMD\_SET\_DUAL\_MONO\_REMAP

Sets the dual/mono mapping configuration. This is currently used by the Integrated Services Digital Broadcasting – Terrestrial (ISDB-T) feature only.

#### CSD message ID

0x0085

#### Version introduced

Major - 1, Minor - 0

#### 3.104.1 Request - QMI\_CSD\_AS\_CMD\_SET\_DUAL\_MONO\_REMAP\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Dual/Mono Remap Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Dual/Mono Remap Configuration
Length	4			2	
Value	→	enum	remap_type	4	Dual/mono remap configuration. Supported values: <ul style="list-style-type: none"> <li>• 0 – First Single Channel Element (SCE) to the left channel and the second SCE to the right channel.</li> <li>• 1 – First SCE to the right channel, and the second SCE to the left channel.</li> <li>• 2 – First SCE to both the left and right channels.</li> <li>• 4 – Second SCE to both the left and right channels.</li> </ul>



**Optional TLVs**

None

**3.104.2 Response - QMI\_CSD\_AS\_CMD\_SET\_DUAL\_MONO\_REMAP\_-RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.104.3 Description of QMI\_CSD\_AS\_CMD\_SET\_DUAL\_MONO\_REMAP REQ/RESP

This command sets the dual/mono mapping configuration.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.105 QMI\_CSD\_AS\_CMD\_ADJUST\_SESSION\_CLOCK

Adjusts the session time. This command sets the sample number to be added or dropped for the ISDB-T feature.

### CSD message ID

0x0086

### Version introduced

Major - 1, Minor - 0

### 3.105.1 Request - QMI\_CSD\_AS\_CMD\_ADJUST\_SESSION\_CLOCK\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
High Time in Microseconds	1.0	1.0
Low Time in Microseconds	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	High Time in Microseconds
Length	4			2	
Value	→	uint32	time_high	4	Upper 32 bits of the 64-bit adjustment to the session clock in microseconds.
Type	0x03			1	Low Time in Microseconds
Length	4			2	
Value	→	uint32	time_low	4	Lower 32 bits of the 64-bit adjustment to the session clock in microseconds.

#### Optional TLVs

None

### 3.105.2 Response - QMI\_CSD\_AS\_CMD\_ADJUST\_SESSION\_CLOCK\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0
Low Time Estimated Processing Time	1.0	1.0
High Time Estimated Processing Time	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x12			1	Low Time Estimated Processing Time
Length	4			2	
Value	→	uint32	estimated_processing_time_low	4	Lower 32 bits of the 64-bit estimated processing time in microseconds. Provides the time duration the DSP needs to finish the adjustment.
Type	0x13			1	High Time Estimated Processing Time
Length	4			2	
Value	→	uint32	estimated_processing_time_high	4	Upper 32 bits of the 64-bit estimated processing time in microseconds. Provides the time duration the DSP needs to finish the adjustment.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing.
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.105.3 Description of QMI\_CSD\_AS\_CMD\_ADJUST\_SESSION\_CLOCK REQ/RESP

This command adjusts the session time. This command sets the sample number to be added or dropped for the ISDB-T feature.

The response message field for the time required by the DSP to finish the adjustment is valid only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.106 QMI\_CSD\_AS\_CMD\_SET\_AAC\_SBR\_PS

Sets the Spectral Band Replication (SBR) flag or the Parametric Stereo (PS) flag for the AAC format.

#### CSD message ID

0x0087

#### Version introduced

Major - 1, Minor - 0

### 3.106.1 Request - QMI\_CSD\_AS\_CMD\_SET\_AAC\_SBR\_PS\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
AAC SBR PS Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	AAC SBR PS Configuration
Length	4			2	
Value	→	enum	type	4	AAC SBR PS configuration. Supported values: <ul style="list-style-type: none"> <li>• 0 – SBR is off, and parametric stereo AAC is off</li> <li>• 1 – SBR is on, and parametric stereo AAC is off</li> <li>• 2 – SBR is on, and parametric stereo AAC is on</li> </ul>

#### Optional TLVs

None

### 3.106.2 Response - QMI\_CSD\_AS\_CMD\_SET\_AAC\_SBR\_PS\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.106.3 Description of QMI\_CSD\_AS\_CMD\_SET\_AAC\_SBR\_PS REQ/RESP

This command sets the SBR flag or PS AAC flag for the AAC format.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.107 QMI\_CSD\_AS\_CMD\_DTMF\_CTL

Starts/stops the DTMF signal.

### CSD message ID

0x0088

### Version introduced

Major - 1, Minor - 0

### 3.107.1 Request - QMI\_CSD\_AS\_CMD\_DTMF\_CTL\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
DTMF Tone 1	1.0	1.0
DTMF Tone 2	1.0	1.0
DTMF Gain	1.0	1.0
DTMF Tone Duration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	DTMF Tone 1
Length	2			2	
Value	→	uint16	tone_1	2	First tone frequency for DTMF. Supported values: 100 to 4000 Hz.
Type	0x03			1	DTMF Tone 2
Length	2			2	
Value	→	uint16	tone_2	2	Second tone frequency for DTMF. Supported values: 100 to 4000 Hz.
Type	0x04			1	DTMF Gain
Length	2			2	
Value	→	uint16	gain_index	2	DTMF gain.
Type	0x05			1	DTMF Tone Duration
Length	2			2	



Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	int16	duration	2	Duration of the DTMF tone in milliseconds. Supported values: <ul style="list-style-type: none"> <li>• -1 – Infinite duration</li> <li>• 0 – Disables/stops the infinite tone</li> <li>• &gt; 0 – Finite duration in milliseconds</li> </ul>

**Optional TLVs**

None

**3.107.2 Response - QMI\_CSD\_AS\_CMD\_DTMF\_CTL\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.107.3 Description of QMI\_CSD\_AS\_CMD\_DTMF\_CTL REQ/RESP

This command starts/stops the DTMF signal.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

QUALCOMM®  
2016-05-16 00:15:01 PDT  
deon\_zhang@askey.com.tw

## 3.108 QMI\_CSD\_AS\_CMD\_SET\_STREAM\_INFO

Sets the stream information properties for this session. This includes the maximum buffer size supported and the type of memory to be passed to the CSD.

### CSD message ID

0x0089

### Version introduced

Major - 1, Minor - 0

### 3.108.1 Request - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_INFO\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Maximum Buffer Size	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Maximum Buffer Size
Length	4			2	
Value	→	uint32	max_buf_size	4	Maximum buffer size to be passed to the CSD.

#### Optional TLVs

None

### 3.108.2 Response - QMI\_CSD\_AS\_CMD\_SET\_STREAM\_INFO\_RESP

#### Message type

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.108.3 Description of QMI\_CSD\_AS\_CMD\_SET\_STREAM\_INFO REQ/RESP

This command sets the stream information properties for this session.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.109 QMI\_CSD\_AS\_CMD\_GET\_RENDERED\_BYTE\_OFFSET

Gets the last rendered byte offset of the bitstream.

### CSD message ID

0x008A

### Version introduced

Major - 1, Minor - 0

### 3.109.1 Request - QMI\_CSD\_AS\_CMD\_GET\_RENDERED\_BYTE\_OFFSET\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

#### Optional TLVs

None

### 3.109.2 Response - QMI\_CSD\_AS\_CMD\_GET\_RENDERED\_BYTE\_OFFSET\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Stream Handle	1.0	1.0
Byte Offset	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x12			1	Byte Offset
Length	8			2	
Value	→	uint64	offset	8	Byte offset.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.109.3 Description of QMI\_CSD\_AS\_CMD\_GET\_RENDERED\_BYTE\_OFFSET REQ/RESP

This command gets the last rendered byte offset of the bitstream.

The response returns a valid offset only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.110 QMI\_CSD\_AS\_CMD\_GET\_MIDI\_SEQUENCE\_ID

Gets the MIDI sequence associated with a MIDI playback session.

#### CSD message ID

0x008B

#### Version introduced

Major - 1, Minor - 0

#### 3.110.1 Request - QMI\_CSD\_AS\_CMD\_GET\_MIDI\_SEQUENCE\_ID\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

##### Optional TLVs

None

#### 3.110.2 Response - QMI\_CSD\_AS\_CMD\_GET\_MIDI\_SEQUENCE\_ID\_RESP

##### Message type

Response

##### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Stream Handle	1.0	1.0
Sequence ID	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x12			1	Sequence ID
Length	1			2	
Value	→	uint8	sequence_id	1	Sequence ID.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.110.3 Description of QMI\_CSD\_AS\_CMD\_GET\_MIDI\_SEQUENCE\_ID REQ/RESP

This command gets the MIDI sequence that is associated with a MIDI playback session.

The response returns a valid sequence ID only when no QMI errors occur.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.



### 3.111 QMI\_CSD\_AS\_CMD\_ENCODER\_BIT\_RATE\_UPDATE

Dynamically changes the encoder bitrate during a recoding session.

#### CSD message ID

0x008C

#### Version introduced

Major - 1, Minor - 0

#### 3.111.1 Request - QMI\_CSD\_AS\_CMD\_ENCODER\_BIT\_RATE\_UPDATE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Playback Format Type	1.0	1.0
Bitrate	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Playback Format Type
Length	4			2	
Value	→	enum	fmt_type	4	Format type for playback. Supported values: • 6 – Format for AAC • 15 – Format for SBC
Type	0x03			1	Bitrate
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint32	bit_rate	4	<p>New bitrate applied to future incoming encoded streams by clients.</p> <p>For SBC encoder, maximum supported bitrate:</p> <ul style="list-style-type: none"> <li>• 320 kbps for mono channel</li> <li>• 512 kbps for stereo channels</li> </ul> <p>For AAC encoder:</p> <p>Input sampling frequency (f_s) in hertz</p> <p>Minimum values:</p> <ul style="list-style-type: none"> <li>• Min(24000, 0.5*f_s); AAC_LC (mono)</li> <li>• Min(24000, f_s); AAC_LC (stereo)</li> <li>• 24000; AAC+ (mono), AAC+ (stereo), and eAAC+</li> </ul> <p>Maximum values:</p> <ul style="list-style-type: none"> <li>• Min(192000, 6*f_s); AAC_LC (mono)</li> <li>• Min(192000, 12*f_s); AAC_LC (stereo)</li> <li>• Min(192000, 6*f_s); AAC+ (mono).</li> <li>• Min(192000, 12*f_s); AAC+ (stereo)</li> <li>• Min(192000, 12*f_s); eAAC+</li> </ul>

**Optional TLVs**

None

### 3.111.2 Response - QMI\_CSD\_AS\_CMD\_ENCODER\_BIT\_RATE\_UPDATE\_RESP

**Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.111.3 Description of QMI\_CSD\_AS\_CMD\_ENCODER\_BIT\_RATE\_UPDATE REQ/RESP

This command dynamically changes the encoder bitrate during a recoding session.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.112 QMI\_CSD\_AS\_CMD\_CONFIG\_DECODER\_MULTI\_- CHANNEL\_WMAV10

Configures the Windows Media Audio 10 Pro audio decoder to output PCM samples based on a multiple channel configuration defined by the client.

#### CSD message ID

0x008D

#### Version introduced

Major - 1, Minor - 0

#### 3.112.1 Request - QMI\_CSD\_AS\_CMD\_CONFIG\_DECODER\_MULTI\_- CHANNEL\_WMAV10\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Channel Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Channel Configuration
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	int32	channel_mask	4	Channel configuration can be set by the client to determine the type of downmixing that is to be applied by the decoder to get the desired output channels. Supported values: <ul style="list-style-type: none"> <li>• -1 – No decoder downmixing is required.</li> <li>• Any valid combination of Windows Media Audio 10 Pro channel bitfields. See Appendix I for information on multiple channel bitfield definitions. See Appendix J for information on popular multiple-channel configuration settings.</li> </ul>

**Optional TLVs**

None

### 3.112.2 Response - QMI\_CSD\_AS\_CMD\_CONFIG\_DECODER\_MULTI - CHANNEL\_WMAV10\_RESP

**Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x11			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.112.3 Description of QMI\_CSD\_AS\_CMD\_CONFIG\_DECODER\_MULTI\_CHANNEL\_WMAV10 REQ/RESP

This command configures the Windows Media Audio 10 Pro audio decoder to output PCM samples based on a multiple channel configuration defined by the client.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see [Appendix A](#).

### 3.113 QMI\_CSD\_AS\_CMD\_CONFIG\_DECODER\_MULTI\_-CHANNEL\_EAC3

Configures the EAC3 audio decoder to output PCM samples based on a multiple channel configuration defined by the client.

#### CSD message ID

0x008E

#### Version introduced

Major - 1, Minor - 0

#### 3.113.1 Request - QMI\_CSD\_AS\_CMD\_CONFIG\_DECODER\_MULTI\_-CHANNEL\_EAC3\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Number of Decoder Output Channels	1.0	1.0
Channel Configuration	1.0	1.0
Channel Mapping Array	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Number of Decoder Output Channels
Length	4			2	
Value	→	uint32	num_channels	4	Number of decoder output channels. Supported values: 1 to 8.
Type	0x03			1	Channel Configuration
Length	4			2	
Value	→	enum	channel_config	4	Channel configuration can be set by the client to determine the number of downmixed channels present in the decoder output. See Appendix K for EAC3 channel configurations.

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x04			1	Channel Mapping Array
Length	32			2	
Value	→	enum	channel_mapping	32	Channel mapping array. Supported values: <ul style="list-style-type: none"> <li>• 0 – Invalid channel</li> <li>• 1 – Front left channel</li> <li>• 2 – Front center channel</li> <li>• 3 – Front right channel</li> <li>• 4 – Surround left channel</li> <li>• 5 – Surround right channel</li> <li>• 6 – Low frequency channel</li> <li>• 7 – Extension X1 channel</li> <li>• 8 – Extension X2 channel</li> </ul>

**Optional TLVs**

None

**3.113.2 Response - QMI\_CSD\_AS\_CMD\_CONFIG\_DECODER\_MULTI - CHANNEL\_EAC3\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Stream Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.



**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

**3.113.3 Description of QMI\_CSD\_AS\_CMD\_CONFIG\_DECODER\_MULTI\_CHANNEL\_EAC3 REQ/RESP**

This command configures the EAC3 audio decoder to output PCM samples based on a multiple channel configuration defined by the client.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

### 3.114 QMI\_CSD\_AS\_EVT\_SR\_CM\_CHANGE\_IND

Indicates a sample rate change or channel configuration change information to the stream client.

#### CSD message ID

0x008F

#### Version introduced

Major - 1, Minor - 0

#### 3.114.1 Indication - QMI\_CSD\_AS\_EVT\_SR\_CM\_CHANGE\_IND

##### Message type

Indication

##### Sender

Service

##### Scope

Unicast

##### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Stream Handle	1.0	1.0
Stream Sample Rate	1.0	1.0
Channel Configuration	1.0	1.0
Channel Mapping Array	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio stream.
Type	0x02			1	Stream Sample Rate
Length	4			2	
Value	→	uint32	sample_rate	4	Stream sample rate.
Type	0x03			1	Channel Configuration
Length	2			2	
Value	→	uint16	num_channels	2	Channel configuration.
Type	0x04			1	Channel Mapping Array
Length	8			2	
Value	→	uint8	channel_mapping	8	Channel mapping array.

**Optional TLVs**

None

**3.114.2 Description of QMI\_CSD\_AS\_EVT\_SR\_CM\_CHANGE\_IND**

This indication communicates a sample rate change or channel configuration change to the stream client.

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## 3.115 QMI\_CSD\_AC\_CMD\_AS\_ATTACH

Attaches streams to the audio context.

### CSD message ID

0x0090

### Version introduced

Major - 1, Minor - 0

### 3.115.1 Request - QMI\_CSD\_AC\_CMD\_AS\_ATTACH\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
Audio Stream Handles Array	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Handle
Length	4			2	
Value	→	uint32	ac_handle	4	Unique handle for the audio context.
Type	0x02			1	Audio Stream Handles Array
Length	Var			2	
Value	→	uint8	as_handles_len	1	Number of sets of the following elements: • as_handles
		uint32	as_handles	Var	Array of the audio stream handles.

#### Optional TLVs

None

### 3.115.2 Response - QMI\_CSD\_AC\_CMD\_AS\_ATTACH\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Context Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Audio context handle.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.115.3 Description of QMI\_CSD\_AC\_CMD\_AS\_ATTACH REQ/RESP

This command attaches streams to the audio context.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.116 QMI\_CSD\_AC\_CMD\_AS\_DETACH

Detaches streams from the audio context.

### CSD message ID

0x0091

### Version introduced

Major - 1, Minor - 0

### 3.116.1 Request - QMI\_CSD\_AC\_CMD\_AS\_DETACH\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
Audio Stream Handles Array	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Handle
Length	4			2	
Value	→	uint32	ac_handle	4	Audio context handle.
Type	0x02			1	Audio Stream Handles Array
Length	Var			2	
Value	→	uint8	as_handles_len	1	Number of sets of the following elements: • as_handles
		uint32	as_handles	Var	Array of the audio stream handles.

#### Optional TLVs

None

### 3.116.2 Response - QMI\_CSD\_AC\_CMD\_AS\_DETACH\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Context Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Audio context handle.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.116.3 Description of QMI\_CSD\_AC\_CMD\_AS\_DETACH REQ/RESP

This command detaches streams from the audio context.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.117 QMI\_CSD\_AC\_CMD\_SET\_DEVICE

Sets the device ID information for an audio context.

### CSD message ID

0x0092

### Version introduced

Major - 1, Minor - 0

### 3.117.1 Request - QMI\_CSD\_AC\_CMD\_SET\_DEVICE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
Device Sample Rate	1.0	1.0
Device ID	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Handle
Length	4			2	
Value	→	uint32	ac_handle	4	Unique handle for the audio context.
Type	0x02			1	Device Sample Rate
Length	4			2	
Value	→	enum	sample_rate	4	Sample rate for the device. Supported values: <ul style="list-style-type: none"> <li>• QMI_CSD_DEV_SR_8000 (8000) – 8000 samples per second</li> <li>• QMI_CSD_DEV_SR_16000 (16000) – 16000 samples per second</li> <li>• QMI_CSD_DEV_SR_48000 (48000) – 48000 samples per second</li> </ul>
Type	0x03			1	Device ID
Length	4			2	
Value	→	uint32	dev_id	4	Device ID.



**Optional TLVs**

None

**3.117.2 Response - QMI\_CSD\_AC\_CMD\_SET\_DEVICE\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Context Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Audio context handle.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

**3.117.3 Description of QMI\_CSD\_AC\_CMD\_SET\_DEVICE REQ/RESP**

This command sets the device ID information for an audio context.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.118 QMI\_CSD\_AC\_CMD\_ENABLE

Enables the audio context.

### CSD message ID

0x0093

### Version introduced

Major - 1, Minor - 0

### 3.118.1 Request - QMI\_CSD\_AC\_CMD\_ENABLE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Handle
Length	4			2	
Value	→	uint32	ac_handle	4	Unique handle for the audio context.

#### Optional TLVs

None

### 3.118.2 Response - QMI\_CSD\_AC\_CMD\_ENABLE\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Context Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Audio context handle.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.118.3 Description of QMI\_CSD\_AC\_CMD\_ENABLE REQ/RESP

This command enables the audio context.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.119 QMI\_CSD\_AC\_CMD\_DISABLE

Disables the audio context.

### CSD message ID

0x0094

### Version introduced

Major - 1, Minor - 0

### 3.119.1 Request - QMI\_CSD\_AC\_CMD\_DISABLE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Handle
Length	4			2	
Value	→	uint32	ac_handle	4	Audio context handle.

#### Optional TLVs

None

### 3.119.2 Response - QMI\_CSD\_AC\_CMD\_DISABLE\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Context Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Audio context handle.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.119.3 Description of QMI\_CSD\_AC\_CMD\_DISABLE REQ/RESP

This command disables the audio context.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.120 QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL\_MASTER\_GAIN

Sets the master gain for the audio context.

### CSD message ID

0x0095

### Version introduced

Major - 1, Minor - 0

### 3.120.1 Request - QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL\_MASTER\_GAIN\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
Master Gain Step Level	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Audio context handle.
Type	0x02			1	Master Gain Step Level
Length	2			2	
Value	→	uint16	master_gain_step	2	Step level of the master gain. One of the values within the range of values returned by QMI_CSD_AS_CMD_GET_VOL_LEVELS_RESP.

#### Optional TLVs

None

### 3.120.2 Response - QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL\_MASTER\_GAIN\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Audio context handle.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.120.3 Description of QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL\_MASTER\_GAIN\_REQ/RESP

This command sets the master gain for the audio context.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.121 QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL\_STEREO\_GAIN

Sets the stereo gain for the audio context.

#### CSD message ID

0x0096

#### Version introduced

Major - 1, Minor - 0

#### 3.121.1 Request - QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL\_STEREO\_GAIN\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
Left Channel Gain Step Level	1.0	1.0
Right Channel Gain Step Level	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Audio context handle.
Type	0x02			1	Left Channel Gain Step Level
Length	2			2	
Value	→	uint16	left_ch_gain_step	2	Step level of the left channel gain. One of the values within the range of values returned by QMI_CSD_AS_CMD_GET_VOL_LEVELS_RESP.
Type	0x03			1	Right Channel Gain Step Level
Length	2			2	
Value	→	uint16	right_ch_gain_step	2	Step level of the right channel gain. One of the values within the range of values returned by QMI_CSD_AS_CMD_GET_VOL_LEVELS_RESP.



**Optional TLVs**

None

**3.121.2 Response - QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL\_STEREO\_-GAIN\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Audio context handle.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.121.3 Description of QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL\_STEREO\_- GAIN\_REQ/RESP

This command sets the stereo gain for the audio context.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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2016-05-16 00:15:01 PDT  
deon\_zhang@askey.com.tw

## 3.122 QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL\_MULTICHANNEL\_GAIN

Sets the multichannel gain for the audio context.

### CSD message ID

0x0097

### Version introduced

Major - 1, Minor - 0

### 3.122.1 Request - QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL\_MULTICHANNEL\_GAIN\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
Multichannel Gain Volume Levels	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Audio context handle.
Type	0x02			1	Multichannel Gain Volume Levels
Length	Var			2	
Value	→	uint8	multi_ch_gain_len	1	Number of sets of the following elements: <ul style="list-style-type: none"> <li>ch_type</li> <li>gain_idx</li> </ul>

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	ch_type	4	Channel type. Supported values: <ul style="list-style-type: none"> <li>• 1 – Left channel type</li> <li>• 2 – Right channel type</li> <li>• 3 – Center channel type</li> <li>• 4 – Left surround channel type</li> <li>• 5 – Right surround channel type</li> <li>• 6 – Left back channel type</li> <li>• 7 – Right back channel type</li> <li>• 8 – Subwoofer channel type</li> </ul>
		uint16	gain_idx	2	One of the out-of-range indices returned in the QMI_CSD_AS_CMD_GET_VOL_LEVELS_RESP command.

**Optional TLVs**

None

### 3.122.2 Response - QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL - MULTICHANNEL\_GAIN\_RESP

**Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Audio context handle.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

**3.122.3 Description of QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL\_-MULTICHANNEL\_GAIN REQ/RESP**

This command sets the multichannel gain for the audio context.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.123 QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL\_MUTE

Sets the mute/unmute control for the audio context.

#### CSD message ID

0x0098

#### Version introduced

Major - 1, Minor - 0

#### 3.123.1 Request - QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL\_MUTE\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
Mute Mode	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Audio context handle.
Type	0x02			1	Mute Mode
Length	4			2	
Value	→	enum	mute	4	Mute mode: • 0 – Unmute • 1 – Mute

##### Optional TLVs

None

#### 3.123.2 Response - QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL\_MUTE\_RESP

##### Message type

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Audio context handle.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.123.3 Description of QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_VOL\_MUTE REQ/RESP

This command sets the mute/unmute control for the audio context.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.124 QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_EQ\_ENABLE

Enables, configures, or disables the equalizer for the audio context.

### CSD message ID

0x0099

### Version introduced

Major - 1, Minor - 0

### 3.124.1 Request - QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_EQ\_ENABLE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Audio context handle.

#### Optional TLVs

When the QMI\_CSD\_AUD\_PP\_EQ\_ENABLE flag is set, the qmi\_csd\_aud\_pp\_eq\_subband\_t structure is required for equalizer subband configuration. This optional TLV is not required when disabling the equalizer.

Name	Version introduced	Version last modified
Equalizer Subband Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Equalizer Subband Configuration
Length	Var			2	



Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint8	eq_bands_len	1	Number of sets of the following elements: <ul style="list-style-type: none"> <li>• band_idx</li> <li>• filter_type</li> <li>• center_freq_in_hz</li> <li>• filter_gain</li> <li>• lq_factor</li> </ul>
		uint32	band_idx	4	Band index.
		enum	filter_type	4	Equalizer filter type. Supported values are: <ul style="list-style-type: none"> <li>• 0 – Unknown</li> <li>• 1 – Bass boost</li> <li>• 2 – Bass cut</li> <li>• 3 – Treble boost</li> <li>• 4 – Treble cut</li> <li>• 5 – Band boost</li> <li>• 6 – Band cut</li> </ul>
		uint32	center_freq_in_hz	4	Filter band center frequency.
		int32	filter_gain	4	Filter band initial gain in dB. Supported values: +12 dB to -12 dB with 1 dB increments.
		int32	lq_factor	4	Filter band quality factor expressed as a q-8 number; a fixed point number with a q factor of 8 (for example, 3000/(2 <sup>8</sup> )).

### 3.124.2 Response - QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_EQ\_ENABLE - RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Audio context handle.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.124.3 Description of QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_EQ\_ENABLE REQ/RESP

This command enables, configures, or disables the equalizer for the audio context.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.125 QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_QCPR

Enables, configures, or disables QCPR for the audio context.

### CSD message ID

0x009A

### Version introduced

Major - 1, Minor - 0

### 3.125.1 Request - QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_QCPR\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio context.

#### Optional TLVs

When the QMI\_CSD\_AUD\_PP\_QCPR\_ENABLE flag is set, the qmi\_csd\_aud\_pp\_qcpr\_config\_t structure is required for QCPR configuration. This optional TLV is not required when disabling QCPR.

Name	Version introduced	Version last modified
QCPR Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	QCPR Configuration
Length	8			2	
Value	→	enum	preset	4	Preset value for QCPR.
		enum	strength	4	Strength value for QCPR.

### 3.125.2 Response - QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_QCPR\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio context.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.125.3 Description of QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_QCPR REQ/RESP

This command enables, configures, or disables QCPR for the audio context.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.126 QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_SPA

Enables, configures, or disables the spectrum analyzer (SPA) for the audio context.

### CSD message ID

0x009B

### Version introduced

Major - 1, Minor - 0

### 3.126.1 Request - QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_SPA\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio context.

#### Optional TLVs

When the QMI\_CSD\_AUD\_PP\_SPA\_ENABLE flag is set, the qmi\_csd\_aud\_pp\_spa\_config\_t structure is required for SPA configuration. This optional TLV is not required when disabling the SPA.

Name	Version introduced	Version last modified
SPA Configuration	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	SPA Configuration
Length	8			2	
Value	→	uint32	sample_interval	4	Sample interval in terms of number of samples. Supported values: $\geq 512$ samples.

Field	Field value	Field type	Parameter	Size (byte)	Description
		enum	sample_points	4	Specifies the sample points for the SPA filter. Supported values: 32, 64, 128, and 256.

### 3.126.2 Response - QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_SPA\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
CSD Status	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio context.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.126.3 Description of QMI\_CSD\_AC\_CMD\_CONFIG\_PP\_SPA REQ/RESP

This command enables, configures, or disables the SPA for the audio context.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.127 QMI\_CSD\_AC\_CMD\_GET\_SPA\_DATA

Gets the spectrum-analyzed data for the audio context from the driver. Only Asynchronous mode is supported.

### CSD message ID

0x009C

### Version introduced

Major - 1, Minor - 0

### 3.127.1 Request - QMI\_CSD\_AC\_CMD\_GET\_SPA\_DATA\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio context.

#### Optional TLVs

None

### 3.127.2 Response - QMI\_CSD\_AC\_CMD\_GET\_SPA\_DATA\_RESP

#### Message type

Response

#### Sender

Service



## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

SPA data is provided in QMI\_CSD\_AS\_EVT\_SPA\_BUF\_READY\_IND.

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Context Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio context.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.127.3 Description of QMI\_CSD\_AC\_CMD\_GET\_SPA\_DATA REQ/RESP

This command gets the spectrum-analyzed data for the audio context from the driver. Only Asynchronous mode is supported.

The actual spectrum analysis data is ready with the QMI\_CSD\_AC\_EVT\_SPA\_BUF\_READY\_IND indication message.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.128 QMI\_CSD\_AC\_EVT\_SPA\_BUF\_READY\_IND

Indicates the asynchronous spectrum-analyzed buffer production information to the context client. The driver publishes EVT Done once the driver is done producing the buffer with spectrum-analyzed data.

### CSD message ID

0x009C

### Version introduced

Major - 1, Minor - 0

### 3.128.1 Indication - QMI\_CSD\_AC\_EVT\_SPA\_BUF\_READY\_IND

#### Message type

Indication

#### Sender

Service

#### Scope

Unicast

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
SPA Data Buffer Information	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio context.
Type	0x02			1	SPA Data Buffer Information
Length	Var			2	
Value	→	uint16	spa_data_len	2	Number of sets of the following elements: • spa_data
		uint8	spa_data	Var	For detailed SPA data buffer format, refer to <a href="#">80-N4404-1</a> .

#### Optional TLVs

None

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid
QMI_ERR_INVALID_OPERATION	Operation is invalid

**3.128.2 Description of QMI\_CSD\_AC\_EVT\_SPA\_BUF\_READY\_IND**

This indication communicates to the context client the asynchronous spectrum-analyzed buffer production information.

## 3.129 QMI\_CSD\_AC\_CMD\_CONFIG\_MULTI\_CHANNEL

Sets up multiple channels for the audio context. This command applies to the Rx device only.

### CSD message ID

0x009D

### Version introduced

Major - 1, Minor - 0

### 3.129.1 Request - QMI\_CSD\_AC\_CMD\_CONFIG\_MULTI\_CHANNEL\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Audio Context Handle	1.0	1.0
Number of Channels	1.0	1.0
Channel Mapping	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio context.
Type	0x02			1	Number of Channels
Length	2			2	
Value	→	uint16	num_channels	2	Number of channels to be set up by the client. Supported values: 3 to 8.
Type	0x03			1	Channel Mapping
Length	32			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	channel_mapping	32	Channel layout mapping of the audio device. Supported values: <ul style="list-style-type: none"> <li>• 0 – Not a valid channel</li> <li>• 1 – Front left channel</li> <li>• 2 – Front right channel</li> <li>• 3 – Front center channel</li> <li>• 4 – Left surround channel</li> <li>• 5 – Right surround channel</li> <li>• 6 – Low frequency effects channel</li> <li>• 7 – Left back channel</li> <li>• 8 – Right back channel</li> <li>• 9 – Center surround channel</li> <li>• 10 – Top surround channel</li> <li>• 11 – Center vertical height channel</li> <li>• 12 – Mono surround channel</li> <li>• 13 – Front left center channel</li> <li>• 14 – Front right center channel</li> <li>• 15 – Rear left center channel</li> <li>• 16 – Rear right center channel</li> </ul>

**Optional TLVs**

None

**3.129.2 Response - QMI\_CSD\_AC\_CMD\_CONFIG\_MULTI\_CHANNEL\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
CSD Status	1.0	1.0
Audio Context Handle	1.0	1.0

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.
Type	0x11			1	Audio Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the audio context.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing

### 3.129.3 Description of QMI\_CSD\_AC\_CMD\_CONFIG\_MULTI\_CHANNEL REQ/RESP

This command sets up multiple channels for the audio context. This command applies to the Rx device only.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.130 QMI\_CSD\_IOCTL\_DEV\_CMD\_CONNECT\_DEVICE

Connects two devices together, one as a source and the other as a sink.

#### CSD message ID

0x009E

#### Version introduced

Major - 1, Minor - 2

#### 3.130.1 Request - QMI\_CSD\_IOCTL\_DEV\_CMD\_CONNECT\_DEVICE\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Device Handle	1.2	1.2
Device Pair Connection	1.2	1.2

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Device Handle
Length	4			2	
Value	→	uint32	handle	4	Device handle.
Type	0x02			1	Device Pair Connection
Length	9			2	
Value	→	boolean	connect_flag	1	Indicates whether the devices are to be attached (connected) or detached (disconnected): • TRUE – Connected (default) • FALSE – Disconnected
		uint32	source_dev_id	4	Device ID for the source device.
		uint32	sink_dev_id	4	Device ID for the sink device.

##### Optional TLVs

None

### 3.130.2 Response - QMI\_CSD\_IOCTL\_DEV\_CMD\_CONNECT\_DEVICE\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
CSD Status	1.2	1.2

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.130.3 Description of QMI\_CSD\_IOCTL\_DEV\_CMD\_CONNECT\_DEVICE\_REQ/RESP

This command connects two devices together, one as a source and the other as a sink.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.



### 3.131 QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_NUMBER\_OF\_- VOLUME\_STEPS

Sets the total number of Rx volume steps.

#### CSD message ID

0x009F

#### Version introduced

Major - 1, Minor - 2

#### 3.131.1 Request - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_NUMBER\_OF\_- VOLUME\_STEPS\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.2	1.2
Number of Volume Steps	1.2	1.2

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x02			1	Number of Volume Steps
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	value	4	Number of volume steps.

#### Optional TLVs

None

### 3.131.2 Response - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_NUMBER\_OF\_VOLUME\_STEPS\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.2	1.2
Transaction Identifier	1.2	1.2
CSD Status	1.2	1.2

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.131.3 Description of QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_NUMBER\_OF\_VOLUME\_STEPS REQ/RESP

This command sets the total number of volume steps.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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### 3.132 QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_RX\_VOLUME\_STEP

Sets a specific volume step.

#### CSD message ID

0x00A0

#### Version introduced

Major - 1, Minor - 2

#### 3.132.1 Request - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_RX\_VOLUME\_STEP\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.2	1.2
Rx Volume Step	1.2	1.2

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x02			1	Rx Volume Step
Length	10			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	vol_step	4	Rx target volume step to be set to context.
		uint16	ramp_duration	2	Ramp duration to disable/enable the Mute feature. Range: 0 to 5000 ms.

#### Optional TLVs

None

### 3.132.2 Response - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_RX\_VOLUME\_STEP\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.2	1.2
Transaction Identifier	1.2	1.2
CSD Status	1.2	1.2

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.132.3 Description of QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_RX\_VOLUME\_-STEP REQ/RESP

This command sets a specific volume step.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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### 3.133 QMI\_CSD\_IOCTL\_VS\_CMD\_START\_PLAYBACK

Starts the injection of playback into the voice call. The playback on the device ID provided is injected into the Tx path of the conversation on the voice call.

#### CSD message ID

0x00A1

#### Version introduced

Major - 1, Minor - 2

#### 3.133.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_START\_PLAYBACK\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.2	1.2
Transaction Identifier	1.2	1.2
Device ID	1.2	1.2

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x03			1	Device ID
Length	4			2	
Value	→	uint32	dev_id	4	Audio received at the device ID is delivered to the Tx voice call path.

##### Optional TLVs

None

### 3.133.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_START\_PLAYBACK\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.2	1.2
Transaction Identifier	1.2	1.2
CSD Status	1.2	1.2

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid



### 3.133.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_START\_PLAYBACK REQ/RESP

This command starts the injection of playback into the voice call. The playback on the device ID provided is injected into the Tx path of the conversation on the voice call. The device is listed as an Rx device because the audio buffers are being delivered for playback.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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### 3.134 QMI\_CSD\_IOCTL\_VS\_CMD\_STOP\_PLAYBACK

Stops the mixing of audio with the voice Tx.

#### CSD message ID

0x00A2

#### Version introduced

Major - 1, Minor - 2

#### 3.134.1 Request - QMI\_CSD\_IOCTL\_VS\_CMD\_STOP\_PLAYBACK\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Stream Handle	1.2	1.2
Transaction Identifier	1.2	1.2

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x02			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.

##### Optional TLVs

None

#### 3.134.2 Response - QMI\_CSD\_IOCTL\_VS\_CMD\_STOP\_PLAYBACK\_RESP

##### Message type

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Stream Handle	1.2	1.2
Transaction Identifier	1.2	1.2
CSD Status	1.2	1.2

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Stream Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice stream.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.134.3 Description of QMI\_CSD\_IOCTL\_VS\_CMD\_STOP\_PLAYBACK REQ/RESP

This command stops music delivery at the Tx path.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.135 QMI\_CSD\_IOCTL\_VM\_CMD\_STANDBY\_VOICE

Standby voice on the voice manager.

#### CSD message ID

0x00A3

#### Version introduced

Major - 1, Minor - 3

#### 3.135.1 Request - QMI\_CSD\_IOCTL\_VM\_CMD\_STANDBY\_VOICE\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.3	1.3
Transaction Identifier	1.3	1.3

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x02			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the completed command.

##### Optional TLVs

None

#### 3.135.2 Response - QMI\_CSD\_IOCTL\_VM\_CMD\_STANDBY\_VOICE\_RESP

##### Message type

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Name	Version introduced	Version last modified
Result Code	1.3	1.3

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Manager Handle	1.3	1.3
Transaction Identifier	1.3	1.3
CSD Status	1.3	1.3

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the completed command.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.135.3 Description of QMI\_CSD\_IOCTL\_VM\_CMD\_STANDBY\_VOICE REQ/RESP

This command keeps the voice processing in Standby mode on the voice manager.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding CSD; see [Appendix A](#).

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### 3.136 QMI\_CSD\_IOCTL\_DEV\_CMD\_AANC\_CONTROL

Controls the Adaptive Active Noise Cancellation (AANC) on a device.

#### CSD message ID

0x00A4

#### Version introduced

Major - 1, Minor - 7

#### 3.136.1 Request - QMI\_CSD\_IOCTL\_DEV\_CMD\_AANC\_CONTROL\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Device Handle	1.7	1.7
Transmit Device ID	1.7	1.7
Receive Device ID	1.7	1.7
Reference Device ID	1.7	1.7
Adaptive Active Noise Cancellation Control	1.7	1.7

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Device Handle
Length	4			2	
Value	→	uint32	handle	4	Device handle.
Type	0x02			1	Transmit Device ID
Length	4			2	
Value	→	uint32	tx_dev_id	4	Transmit device ID.
Type	0x03			1	Receive Device ID
Length	4			2	
Value	→	uint32	rx_dev_id	4	Receive device ID.
Type	0x04			1	Reference Device ID
Length	4			2	
Value	→	uint32	ref_dev_id	4	Reference device ID.
Type	0x05			1	Adaptive Active Noise Cancellation Control
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	aanc_ctrl	4	Adaptive active noise cancellation control. Values: <ul style="list-style-type: none"> <li>• QMI_CSD_DEV_AFE_AANC_DISABLE (0) – Disables the AFE AANC.</li> <li>• QMI_CSD_DEV_AFE_AANC_ENABLE (1) – Enables the AFE AANC.</li> <li>• QMI_CSD_DEV_AFE_AANC_ACDB_CTRL (2) – Use the value stored in the ACDB.</li> </ul>

**Optional TLVs**

None

**3.136.2 Response - QMI\_CSD\_IOCTL\_DEV\_CMD\_AANC\_CONTROL\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Name	Version introduced	Version last modified
Result Code	1.7	1.7

**Optional TLVs**

Name	Version introduced	Version last modified
CSD Status	1.7	1.7

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.



**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

**3.136.3 Description of QMI\_CSD\_IOCTL\_DEV\_CMD\_AANC\_CONTROL REQ/RESP**

This command enables/disables AANC.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

### 3.137 QMI\_CSD\_IOCTL\_VM\_CMD\_PAUSE\_VOICE

Pause voice on the voice manager.

#### CSD message ID

0x00A5

#### Version introduced

Major - 1, Minor - 7

#### 3.137.1 Request - QMI\_CSD\_IOCTL\_VM\_CMD\_PAUSE\_VOICE\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.7	1.7
Transaction Identifier	1.7	1.7

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x02			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the completed command.

##### Optional TLVs

None

#### 3.137.2 Response - QMI\_CSD\_IOCTL\_VM\_CMD\_PAUSE\_VOICE\_RESP

##### Message type

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Name	Version introduced	Version last modified
Result Code	1.7	1.7

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Manager Handle	1.7	1.7
Transaction Identifier	1.7	1.7
CSD Status	1.7	1.7

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the completed command.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.137.3 Description of QMI\_CSD\_IOCTL\_VM\_CMD\_PAUSE\_VOICE REQ/RESP

This command keeps the voice processing in the Pause state on the voice manager. The QMI\_CSD\_IOCTL\_VM\_CMD\_START\_VOICE command is used to resume the voice processing.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding CSD; see Appendix [A](#).

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### 3.138 QMI\_CSD\_IOCTL\_DEV\_CMD\_RESTART

Dynamically restarts the device at a new sampling rate without bring down the clocks.

#### CSD message ID

0x00A6

#### Version introduced

Major - 1, Minor - 8

#### 3.138.1 Request - QMI\_CSD\_IOCTL\_DEV\_CMD\_RESTART\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Device Handle	1.8	1.8
Restart Device	1.8	1.8

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Device Handle
Length	4			2	
Value	→	uint32	handle	4	Device handle.
Type	0x02			1	Restart Device
Length	12			2	
Value	→	uint32	tx_dev_id	4	Tx device ID.
		uint32	rx_dev_id	4	Rx device ID.
		uint32	sample_rate	4	Sample rate to switch to

##### Optional TLVs

None

#### 3.138.2 Response - QMI\_CSD\_IOCTL\_DEV\_CMD\_RESTART\_RESP

##### Message type

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Name	Version introduced	Version last modified
Result Code	1.8	1.8

**Optional TLVs**

Name	Version introduced	Version last modified
CSD Status	1.8	1.8

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

**3.138.3 Description of QMI\_CSD\_IOCTL\_DEV\_CMD\_RESTART\_REQ/RESP**

This command dynamically reconfigures an I2S device's sampling rate without stopping the Mclk and WS.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding CSD; see Appendix A.

### 3.139 QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_CAL\_FEATURE\_ID

Sets the specific calibration feature ID.

#### CSD message ID

0x00A7

#### Version introduced

Major - 1, Minor - 9

#### 3.139.1 Request - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_CAL\_FEATURE\_ID\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Context Handle	1.9	1.9
Set Calibration Feature	1.9	1.9

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x02			1	Set Calibration Feature Set the calibration feature ID payload.
Length	12			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	feature_id	4	Feature ID value that is set for a specific feature.
		enum	feature_type	4	Specify the type of feature: • 0 – Volume calibration feature ID • 1 – Topology feature ID

**Optional TLVs**

None

**3.139.2 Response - QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_CAL\_FEATURE\_ID\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Name	Version introduced	Version last modified
Result Code	1.9	1.9

**Optional TLVs**

Name	Version introduced	Version last modified
Voice Context Handle	1.9	1.9
Transaction Identifier	1.9	1.9
CSD Status	1.9	1.9

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Context Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice context.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.



**Error codes**

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.139.3 Description of QMI\_CSD\_IOCTL\_VC\_CMD\_SET\_CAL\_FEATURE\_ID REQ/RESP

This command sets the calibration feature ID. The client can set the specific calibration feature during a voice call. This feature is applicable one time in the voice call and remains intact until the next calibration request is sent to the client.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

### 3.140 QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_HDVOICE\_MODE

Sets the HD Voice mode on the voice manager.

#### CSD message ID

0x00A8

#### Version introduced

Major - 1, Minor - 10

#### 3.140.1 Request - QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_HDVOICE\_MODE - REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.10	1.10
HD Voice Mode Type	1.10	1.10

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x02			1	HD Voice Mode Type
Length	8			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
		uint32	mode	4	Mode type: • 0 – Disable HD Voice • 1 – Enable HD Voice

##### Optional TLVs

None

### 3.140.2 Response - QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_HDVOICE\_MODE\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

Name	Version introduced	Version last modified
Result Code	1.10	1.10

#### Optional TLVs

Name	Version introduced	Version last modified
Voice Manager Handle	1.10	1.10
Transaction Identifier	1.10	1.10
CSD Status	1.10	1.10

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Voice Manager Handle
Length	4			2	
Value	→	uint32	handle	4	Unique handle for the voice manager.
Type	0x11			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Transaction identifier provided by the client that allows the client to identify the command that completed.
Type	0x12			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.140.3 Description of QMI\_CSD\_IOCTL\_VM\_CMD\_SET\_HDVOICE\_MODE REQ/RESP

This command sets the HD Voice mode on the voice manager.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.141 QMI\_CSD\_VOICE\_CONFIG

Configures an audio device and prepares the associated audio module.

### CSD message ID

0x00A9

### Version introduced

Major - 1, Minor - 11

### 3.141.1 Request - QMI\_CSD\_VOICE\_CONFIG\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
Voice Session ID	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x02			1	Voice Session ID
Length	Var			2	
Value	→	string	session_id	Var	Voice session ID.

#### Optional TLVs

Name	Version introduced	Version last modified
Tx Device Info	1.11	1.11
Rx Device Info	1.11	1.11
Echo Cancellation Reference Device	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Tx Device Info Audio Tx device information.
Length	12			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint32	dev_id	4	Device ID.
		uint32	sample_rate	4	Tx sampling rate in Hz.
		uint32	bits_per_sample	4	Bits per sample.
Type	0x11			1	Rx Device Info Audio Rx device information.
Length	12			2	
Value	→	uint32	dev_id	4	Device ID.
		uint32	sample_rate	4	Tx sampling rate in Hz.
		uint32	bits_per_sample	4	Bits per sample.
Type	0x12			1	Echo Cancellation Reference Device Echo cancellation reference device information.
Length	12			2	
Value	→	uint32	dev_id	4	Device ID.
		uint32	sample_rate	4	Tx sampling rate in Hz.
		uint32	bits_per_sample	4	Bits per sample.

### 3.141.2 Response - QMI\_CSD\_VOICE\_CONFIG\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
CSD Status	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

### 3.141.3 Description of QMI\_CSD\_VOICE\_CONFIG REQ/RESP

This command configures an audio device and prepares the audio module for use cases such as voice call.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.142 QMI\_CSD\_VOICE\_START

Starts a voice call with the provided audio device.

### CSD message ID

0x00AA

### Version introduced

Major - 1, Minor - 11

### 3.142.1 Request - QMI\_CSD\_VOICE\_START\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
Voice Session ID	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x02			1	Voice Session ID
Length	Var			2	
Value	→	string	session_id	Var	Voice session ID.

#### Optional TLVs

Name	Version introduced	Version last modified
Tx Device Info	1.11	1.11
Rx Device Info	1.11	1.11
Echo Cancellation Reference Device	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Tx Device Info Audio Tx device information.
Length	12			2	



Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint32	dev_id	4	Device ID.
		uint32	sample_rate	4	Tx sampling rate in Hz.
		uint32	bits_per_sample	4	Bits per sample.
Type	0x11			1	Rx Device Info Audio Rx device information.
Length	12			2	
Value	→	uint32	dev_id	4	Device ID.
		uint32	sample_rate	4	Tx sampling rate in Hz.
		uint32	bits_per_sample	4	Bits per sample.
Type	0x12			1	Echo Cancellation Reference Device Echo cancellation reference device information.
Length	12			2	
Value	→	uint32	dev_id	4	Device ID.
		uint32	sample_rate	4	Tx sampling rate in Hz.
		uint32	bits_per_sample	4	Bits per sample.

### 3.142.2 Response - QMI\_CSD\_VOICE\_START\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
CSD Status	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

### 3.142.3 Description of QMI\_CSD\_VOICE\_START REQ/RESP

This command starts a voice call with the provided audio device and its associated audio topology. Device information must be provided via this command unless QMI\_CSD\_VOICE\_CONFIG is invoked beforehand.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see [Appendix A](#).

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### 3.143 QMI\_CSD\_VOICE\_END

Ends a voice call and tears down the associated audio device.

#### CSD message ID

0x00AB

#### Version introduced

Major - 1, Minor - 11

#### 3.143.1 Request - QMI\_CSD\_VOICE\_END\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.

##### Optional TLVs

None

#### 3.143.2 Response - QMI\_CSD\_VOICE\_END\_RESP

##### Message type

Response

##### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
CSD Status	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

### 3.143.3 Description of QMI\_CSD\_VOICE\_END REQ/RESP

This command ends a voice call and tears down the associated audio device.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.144 QMI\_CSD\_VOICE\_DEVICE\_SWITCH

Perform a device switch

### CSD message ID

0x00AC

### Version introduced

Major - 1, Minor - 11

### 3.144.1 Request - QMI\_CSD\_VOICE\_DEVICE\_SWITCH\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
Tx Device Info	1.11	1.11
Rx Device Info	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x02			1	Tx Device Info Audio
					Tx device information.
Length	12			2	
Value	→	uint32	dev_id	4	Device ID.
		uint32	sample_rate	4	Tx sampling rate in Hz.
		uint32	bits_per_sample	4	Bits per sample.
Type	0x03			1	Rx Device Info
					Audio Rx device information.
Length	12			2	
Value	→	uint32	dev_id	4	Device ID.
		uint32	sample_rate	4	Tx sampling rate in Hz.
		uint32	bits_per_sample	4	Bits per sample.

**Optional TLVs**

Name	Version introduced	Version last modified
Echo Cancellation Reference Device	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Echo Cancellation Reference Device Echo cancellation reference device information.
Length	12			2	
Value	→	uint32	dev_id	4	Device ID.
		uint32	sample_rate	4	Tx sampling rate in Hz.
		uint32	bits_per_sample	4	Bits per sample.

**3.144.2 Response - QMI\_CSD\_VOICE\_DEVICE\_SWITCH\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
CSD Status	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

### 3.144.3 Description of QMI\_CSD\_VOICE\_DEVICE\_SWITCH\_REQ/RESP

This command switches the current device to a new device or to new attributes, such as sample rate, etc. The service reports an error if no device is enabled when receiving this command.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix [A](#).

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## 3.145 QMI\_CSD\_AFE\_LOOPBACK

Enables or disables loopback from the AFE to route Tx data to Rx.

### CSD message ID

0x00AD

### Version introduced

Major - 1, Minor - 11

### 3.145.1 Request - QMI\_CSD\_AFE\_LOOPBACK\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
Enable Flag	1.11	1.11
Tx Device Info	1.11	1.11
Rx Device Info	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x02			1	Enable Flag
Length	1			2	
Value	→	boolean	enable	1	Values: • 1 – Enable • 0 – Disable
Type	0x03			1	Tx Device Info
Length	12			2	Audio Tx device information.
Value	→	uint32	dev_id	4	Device ID.
		uint32	sample_rate	4	Tx sampling rate in Hz.
		uint32	bits_per_sample	4	Bits per sample.
Type	0x04			1	Rx Device Info
Length	12			2	Audio Rx device information.



Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	uint32	dev_id	4	Device ID.
		uint32	sample_rate	4	Tx sampling rate in Hz.
		uint32	bits_per_sample	4	Bits per sample.

**Optional TLVs**

None

**3.145.2 Response - QMI\_CSD\_AFE\_LOOPBACK\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
CSD Status	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**3.145.3 Description of QMI\_CSD\_AFE\_LOOPBACK REQ/RESP**

This command enables or disables the loopback functionality in the AFE, which routes Tx data to Rx directly.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.146 QMI\_CSD\_VOICE\_VOLUME\_CONTROL

Configures system volume for voice calls.

### CSD message ID

0x00AE

### Version introduced

Major - 1, Minor - 11

### 3.146.1 Request - QMI\_CSD\_VOICE\_VOLUME\_CONTROL\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
Volume Index	1.11	1.11
Ramp Duration	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x02			1	Volume Index
Length	2			2	
Value	→	uint16	volume_index	2	Index representing the volume of the sound device.
Type	0x03			1	Ramp Duration
Length	2			2	
Value	→	uint16	ramp_duration_in_ms	2	Ramp duration. Value: 0 to 5000 ms

#### Optional TLVs

None

### 3.146.2 Response - QMI\_CSD\_VOICE\_VOLUME\_CONTROL\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
CSD Status	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

### 3.146.3 Description of QMI\_CSD\_VOICE\_VOLUME\_CONTROL REQ/RESP

This command controls the system volume for voice calls.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.147 QMI\_CSD\_VOICE\_MUTE

Mutes or unmutes the audio for a voice call.

### CSD message ID

0x00AF

### Version introduced

Major - 1, Minor - 11

### 3.147.1 Request - QMI\_CSD\_VOICE\_MUTE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
Mute Mode	1.11	1.11
Enable Flag	1.11	1.11
Mute Path Direction	1.11	1.11
Ramp Duration	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track command.
Type	0x02			1	Mute Mode
Length	4			2	
Value	→	enum	mode	4	Mute modes. Values: <ul style="list-style-type: none"> <li>• CSD_VOICE_MUTE_MODE_STREAM (0x00) – Stream mute</li> <li>• CSD_VOICE_MUTE_MODE_DEVICE (0x01) – Device mute</li> <li>• CSD_VOICE_MUTE_MODE_STREAM_DEVICE (0x02) – Stream and device mute</li> </ul>
Type	0x03			1	Enable Flag
Length	1			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	boolean	enable	1	Values: • 0 – Disable mute • 1 – Enable mute
Type	0x04			1	Mute Path Direction
Length	4			2	
Value	→	enum	direction	4	Mute path direction. Values: • CSD_VOICE_MUTE_DIR_TX (0x00) – Tx mute • CSD_VOICE_MUTE_DIR_RX (0x01) – Rx mute • CSD_VOICE_MUTE_DIR_TX_RX (0x02) – Tx and Rx mute
Type	0x05			1	Ramp Duration
Length	2			2	
Value	→	uint16	ramp_duration_in_ms	2	Ramp duration. Value: 0 to 5000 ms

**Optional TLVs**

None

**3.147.2 Response - QMI\_CSD\_VOICE\_MUTE\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
CSD Status	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

### 3.147.3 Description of QMI\_CSD\_VOICE\_MUTE\_REQ/RESP

This command performs a mute or unmute function on a stream or a device.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see [Appendix A](#).

## 3.148 QMI\_CSD\_DTMF\_GENERATION

Generates a DTMF tone.

### CSD message ID

0x00B0

### Version introduced

Major - 1, Minor - 11

### 3.148.1 Request - QMI\_CSD\_DTMF\_GENERATION\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
Direction	1.11	1.11
Duration of the DTMF Tone	1.11	1.12
High Frequency of the DTMF Tone	1.11	1.11
Low Frequency of the DTMF Tone	1.11	1.11
Gain of the DTMF Tone	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x02			1	Direction
Length	4			2	
Value	→	enum	direction	4	DTMF generation detection. Values: • CSD_DTMF_GENERATION_DIR_TX (0x00) – Tx DTMF generation • CSD_DTMF_GENERATION_DIR_RX (0x01) – Rx DTMF generation
Type	0x03			1	Duration of the DTMF Tone
Length	8			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	int64	dtmf_duration_in_ms	8	DTMF duration in milliseconds. Values: <ul style="list-style-type: none"> <li>• -1 – Continuous DTMF of infinite duration</li> <li>• 0 – Stops a continuous DTMF (if it was started)</li> <li>• &gt; 0 – Duration in milliseconds</li> </ul>
Type	0x04			1	High Frequency of the DTMF Tone
Length	2			2	
Value	→	uint16	high_frequency	2	High frequency of the DTMF tone. Values: 0, 100 to 4000 Hz.
Type	0x05			1	Low Frequency of the DTMF Tone
Length	2			2	
Value	→	uint16	low_frequency	2	Low frequency of the DTMF tone. Values: 0, 100 to 4000 Hz.
Type	0x06			1	Gain of the DTMF Tone
Length	2			2	
Value	→	uint16	gain	2	DTMF tone gain. Possible value: Linear value in Q13 format. Because the level of tone generation is fixed at 0 dBFS, this value must be set to a negative gain.

## Optional TLVs

Name	Version introduced	Version last modified
Mix Mode	1.11	1.11
Device Info	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Mix Mode
Length	4			2	
Value	→	enum	mix_mode	4	This field is only applicable for Tx tone generation. Values: <ul style="list-style-type: none"> <li>• CSD_DTMF_MIX_WITH_SPEECH_DISABLE (0x00) – Generated DTMF replaces speech.</li> <li>• CSD_DTMF_MIX_WITH_SPEECH_ENABLE (0x01) – Generated DTMF mixes speech (default)</li> </ul>
Type	0x11			1	Device Info Audio device information.
Length	12			2	
Value	→	uint32	dev_id	4	Device ID.
		uint32	sample_rate	4	Tx sampling rate in Hz.
		uint32	bits_per_sample	4	Bits per sample.



### 3.148.2 Response - QMI\_CSD\_DTMF\_GENERATION\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
CSD Status	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

### 3.148.3 Description of QMI\_CSD\_DTMF\_GENERATION\_REQ/RESP

This command performs DTMF tone generation. The device information is optional if the service is already in a use case that requires a working device, for example, a voice call. If the service is in Idle state, the device information must be provided and the service enables the relative device based on the direction.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.149 QMI\_CSD\_VOICE\_DTMF\_GENERATION\_ENDED\_IND

Indicates that the generation of the DTMF tone has ended.

#### CSD message ID

0x00B1

#### Version introduced

Major - 1, Minor - 11

### 3.149.1 Indication - QMI\_CSD\_VOICE\_DTMF\_GENERATION\_ENDED\_IND

#### Message type

Indication

#### Sender

Service

#### Scope

Unicast (only to the control point that sent the QMI\_CSD\_VOICE\_DTMF\_GENERATION command)

#### Mandatory TLVs

Name	Version introduced	Version last modified
Direction	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Direction
Length	4			2	
Value	→	enum	direction	4	DTMF generation direction. Values: <ul style="list-style-type: none"> <li>• CSD_DTMF_GENERATION_DIR_TX (0x00) – Tx DTMF generation</li> <li>• CSD_DTMF_GENERATION_DIR_RX (0x01) – Rx DTMF generation</li> </ul>

#### Optional TLVs

None

### 3.149.2 Description of QMI\_CSD\_VOICE\_DTMF\_GENERATION\_ENDED\_IND

This indication communicates that a Tx or Rx DTMF generation has ended.

The indication is sent to only the control point that has enabled Tx DTMF generation by sending the QMI\_CSD\_DTMF\_GENERATION command.

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## 3.150 QMI\_CSD\_VOICE\_DTMF\_DETECTION

Enables DTMF detection during a voice call.

### CSD message ID

0x00B2

### Version introduced

Major - 1, Minor - 11

### 3.150.1 Request - QMI\_CSD\_VOICE\_DTMF\_DETECTION\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
Direction	1.11	1.11
Enable Flag	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x02			1	Direction
Length	4			2	
Value	→	enum	direction	4	DTMF detection direction. Values: <ul style="list-style-type: none"> <li>• CSD_VOICE_DTMF_DETECTION_TX_ONLY (0x00) – Tx only</li> <li>• CSD_VOICE_DTMF_DETECTION_RX_ONLY (0x01) – Rx only</li> <li>• CSD_VOICE_DTMF_DETECTION_TX_RX (0x02) – Tx and Rx</li> </ul>
Type	0x03			1	Enable Flag
Length	1			2	
Value	→	boolean	enable	1	Enable flag. Values: <ul style="list-style-type: none"> <li>• 0x00 – Disable</li> <li>• 0x01 – Enable</li> </ul>

**Optional TLVs**

None

**3.150.2 Response - QMI\_CSD\_VOICE\_DTMF\_DETECTION\_RESP****Message type**

Response

**Sender**

Service

**Mandatory TLVs**

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
CSD Status	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**3.150.3 Description of QMI\_CSD\_VOICE\_DTMF\_DETECTION\_REQ/RESP**

This command enables DTMF detection during a voice call.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.151 QMI\_CSD\_VOICE\_DTMF\_DETECTED\_IND

Indicates that a DTMF tone is detected during a voice call.

### CSD message ID

0x00B3

### Version introduced

Major - 1, Minor - 11

### 3.151.1 Indication - QMI\_CSD\_VOICE\_DTMF\_DETECTED\_IND

#### Message type

Indication

#### Sender

Service

#### Scope

Unicast (only to the control point that sent the QMI\_CSD\_VOICE\_DTMF\_DETECTION command)

#### Mandatory TLVs

Name	Version introduced	Version last modified
Direction	1.11	1.11
Detected Low DTMF Frequency	1.11	1.11
High DTMF Frequency Detection	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Direction
Length	4			2	
Value	→	enum	direction	4	DTMF detected direction. Values: • CSD_VOICE_TX_DTMF_DETECTED (0x00) – DTMF detected on Tx • CSD_VOICE_RX_DTMF_DETECTED (0x01) – DTMF detected on Rx
Type	0x02			1	Detected Low DTMF Frequency
Length	2			2	
Value	→	uint16	low_freq	2	Detected low DTMF frequency. Value: 100 to 4000 Hz.
Type	0x03			1	High DTMF Frequency Detection
Length	2			2	
Value	→	uint16	high_freq	2	Detected high DTMF frequency. Value: 100 to 4000 Hz.

**Optional TLVs**

None

**3.151.2 Description of QMI\_CSD\_VOICE\_DTMF\_DETECTED\_IND**

This indication communicates that a Tx or Rx DTMF has been detected.

The indication is sent to only the control point that has enabled Tx or Rx DTMF detection by sending the QMI\_CSD\_VOICE\_DTMF\_DETECTION command.

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## 3.152 QMI\_CSD\_SET\_VOICE\_FEATURE

Enables voice features.

### CSD message ID

0x00B4

### Version introduced

Major - 1, Minor - 11

### 3.152.1 Request - QMI\_CSD\_SET\_VOICE\_FEATURE\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.

#### Optional TLVs

Name	Version introduced	Version last modified
HDVoice Feature Mode	1.11	1.11
Slowtalk Feature Mode	1.11	1.11
TTY Feature Mode	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	HDVoice Feature Mode
Length	4			2	



Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	hdvoice_mode	4	HDVoice feature mode: Values: <ul style="list-style-type: none"> <li>• CSD_HDVOICE_OFF (0x00) – Disable HDVoice. This setting can be applied both before a voice call starts and in the middle of a voice call.</li> <li>• CSD_HDVOICE_ON (0x01) – Enable HDVoice. This setting can be applied both before a voice call starts and in the middle of a voice call.</li> <li>• CSD_HDVOICE_ON_WIDEVOICE2_OFF (0x02) – Enable HDVoice and force widevoice2 to be disabled. This setting can be applied only before a voice call starts.</li> <li>• CSD_HDVOICE_ON_BEAMR_OFF (0x03) – Enable HDVoice and force BeAMR to be disabled. This setting can be applied only before a voice call starts.</li> </ul>
Type	0x11			1	Slowtalk Feature Mode
Length	4			2	
Value	→	enum	slowtalk_mode	4	Slowtalk feature mode. Values: <ul style="list-style-type: none"> <li>• CSD_SLOWTALK_OFF (0x00) – Disable slow talk</li> <li>• CSD_SLOWTALK_ON (0x01) – Enable slow talk</li> </ul>
Type	0x12			1	TTY Feature Mode
Length	4			2	
Value	→	enum	voice_tty_mode	4	TTY feature mode: Values: <ul style="list-style-type: none"> <li>• CSD_TTY_OFF (0x00) – Disable TTY</li> <li>• CSD_TTY_HCO (0x01) – Enable TTY in Hearing Carry-Over (HCO) mode</li> <li>• CSD_TTY_VCO (0x02) – Enable TTY in Voice Carry-Over (VCO) mode</li> <li>• CSD_TTY_FULL (0x03) – Enable TTY in full mode</li> </ul>

### 3.152.2 Response - QMI\_CSD\_SET\_VOICE\_FEATURE\_RESP

#### Message type

Response

Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
CSD Status	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

### 3.152.3 Description of QMI\_CSD\_SET\_VOICE\_FEATURE REQ/RESP

This command enables voice features with the corresponding mode. Only one feature is allowed to be set per execution, otherwise QMI\_ERR\_INVALID\_OPERATION is returned.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

### 3.153 QMI\_CSD\_VOICE\_RECORD\_START

Starts recording during a voice call.

#### CSD message ID

0x00B5

#### Version introduced

Major - 1, Minor - 11

#### 3.153.1 Request - QMI\_CSD\_VOICE\_RECORD\_START\_REQ

##### Message type

Request

##### Sender

Control point

##### Mandatory TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
Rx Tap Point	1.11	1.11
Tx Tap Point	1.11	1.11
Record Mode	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x02			1	Rx Tap Point
Length	4			2	
Value	→	enum	rx_tap_point	4	Rx tap point for recording. Values: <ul style="list-style-type: none"> <li>• CSD_VOICE_RECORD_TAP_POINT_NONE (0x00) – Do not record</li> <li>• CSD_VOICE_RECORD_TAP_POINT_END_OF_STREAM (0x01) – Record at the end of the stream</li> </ul>
Type	0x03			1	Tx Tap Point
Length	4			2	

Field	Field value	Field type	Parameter	Size (byte)	Description
Value	→	enum	tx_tap_point	4	Tx tap point. Values: • CSD_VOICE_RECORD_TAP_POINT_NONE (0x00) – Do not record • CSD_VOICE_RECORD_TAP_POINT_END_OF_STREAM (0x01) – Record at the end of the stream
Type	0x04			1	Record Mode
Length	4			2	
Value	→	enum	mode	4	Record mode. Values: • CSD_VOICE_RECORD_MODE_TX_RX_STEREO (0x00) – Select Tx on the left channel and Rx on the right channel • CSD_VOICE_RECORD_MODE_TX_RX_MIXING (0x01) – Select mixed Tx and Rx paths

#### Optional TLVs

Name	Version introduced	Version last modified
Device ID	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Device ID
Length	4			2	
Value	→	uint32	device_id	4	Conversation data is available on the recording device ID. Data is routed to the AFE port of the device ID indicated. A default recording device is used if this field is not supplied.

### 3.153.2 Response - QMI\_CSD\_VOICE\_RECORD\_START\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

**Optional TLVs**

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
CSD Status	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

**3.153.3 Description of QMI\_CSD\_VOICE\_RECORD\_START REQ/RESP**

This command starts recoding Tx or Rx data during a voice call.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see [Appendix A](#).

## 3.154 QMI\_CSD\_VOICE\_RECORD\_END

Ends recording in a voice call.

### CSD message ID

0x00B6

### Version introduced

Major - 1, Minor - 11

### 3.154.1 Request - QMI\_CSD\_VOICE\_RECORD\_END\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.

#### Optional TLVs

None

### 3.154.2 Response - QMI\_CSD\_VOICE\_RECORD\_END\_RESP

#### Message type

Response

#### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
CSD Status	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

### 3.154.3 Description of QMI\_CSD\_VOICE\_RECORD\_END REQ/RESP

This command ends recording Tx or Rx data during a voice call.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.155 QMI\_CSD\_VOICE\_PLAYBACK\_START

Starts a playback session during a voice call.

### CSD message ID

0x00B7

### Version introduced

Major - 1, Minor - 11

### 3.155.1 Request - QMI\_CSD\_VOICE\_PLAYBACK\_START\_REQ

#### Message type

Request

#### Sender

Control point

#### Mandatory TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.

#### Optional TLVs

Name	Version introduced	Version last modified
Device ID	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Device ID
Length	4			2	
Value	→	uint32	device_id	4	Audio received at the device ID is delivered to the Tx voice call path. A default playback device is used if this field is not supplied.



### 3.155.2 Response - QMI\_CSD\_VOICE\_PLAYBACK\_START\_RESP

#### Message type

Response

#### Sender

Service

#### Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

#### Optional TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
CSD Status	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

#### Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.155.3 Description of QMI\_CSD\_VOICE\_PLAYBACK\_START REQ/RESP

This command starts an audio playback session during a voice call.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

## 3.156 QMI\_CSD\_VOICE\_PLAYBACK\_END

Ends playback in a voice call.

### CSD message ID

0x00B8

### Version introduced

Major - 1, Minor - 11

## 3.156.1 Request - QMI\_CSD\_VOICE\_PLAYBACK\_END\_REQ

### Message type

Request

### Sender

Control point

### Mandatory TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x01			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.

### Optional TLVs

None

## 3.156.2 Response - QMI\_CSD\_VOICE\_PLAYBACK\_END\_RESP

### Message type

Response

### Sender

Service

## Mandatory TLVs

The Result Code TLV (defined in Section 2.3.1) is always present in the response.

## Optional TLVs

Name	Version introduced	Version last modified
Transaction Identifier	1.11	1.11
CSD Status	1.11	1.11

Field	Field value	Field type	Parameter	Size (byte)	Description
Type	0x10			1	Transaction Identifier
Length	4			2	
Value	→	uint32	cmd_token	4	Identifier to track the command.
Type	0x11			1	CSD Status
Length	4			2	
Value	→	enum	qmi_csd_status_code	4	GUID for the CSD status.

## Error codes

QMI_ERR_NONE	No error in the request
QMI_ERR_INTERNAL	Unexpected error occurred during processing
QMI_ERR_MALFORMED_MSG	Message was not formulated correctly by the control point, or the message was corrupted during transmission
QMI_ERR_UNKNOWN	Unknown error occurred during processing
QMI_ERR_GENERAL	General error occurred during processing
QMI_ERR_INVALID_HANDLE	Handle is invalid

### 3.156.3 Description of QMI\_CSD\_VOICE\_PLAYBACK\_END REQ/RESP

This command ends a playback session during a voice call.

This command returns the CSD status code when the QMI error is QMI\_ERR\_GENERAL. The CSD status code shows more detailed error information regarding the CSD; see Appendix A.

# A QMI\_CSD Status Codes

Table A-1 lists the QMI CSD status code enumeration values used in this document.

**Table A-1 QMI\_CSD status codes**

Error code	Value	Description
QMI_CSD_EOK	0x0	Success. The operation completed, and there were no errors.
QMI_CSD_EFAILED	0x00012313	General failure.
QMI_CSD_EBADPARAM	0x00012314	Invalid operation parameters.
QMI_CSD_EUNSUPPORTED	0x00012315	Unsupported routine or operation.
QMI_CSD_EVERSION	0x00012316	Unsupported version.
QMI_CSD_EUNEXPECTED	0x00012317	Unexpected problem was encountered.
QMI_CSD_EPANIC	0x00012318	Unhandled problem occurred.
QMI_CSD_ENORESOURCE	0x00012319	Unable to allocate resources.
QMI_CSD_EHANDLE	0x0001231A	Invalid handle.
QMI_CSD_EALREADY	0x0001231B	Operation is already processed.
QMI_CSD_ENOTREADY	0x0001231C	Operation is not ready to be processed.
QMI_CSD_EPENDING	0x0001231D	Operation is pending completion.
QMI_CSD_EBUSY	0x0001231E	Operation cannot be accepted or processed.
QMI_CSD_EABORTED	0x0001231F	Operation aborted due to an error.
QMI_CSD_EPREEMPTED	0x00012320	Operation was preempted by a higher priority.
QMI_CSD_ECONTINUE	0x00012321	Operation requires intervention to complete.
QMI_CSD_EIMMEDIATE	0x00012322	Operation requires immediate intervention to complete.
QMI_CSD_ENOTIMPL	0x00012323	Operation is not implemented.
QMI_CSD_ENEEDMORE	0x00012324	Operation requires more data or resources.
QMI_CSD_ELPC	0x00012325	Operation is a local procedure call.
QMI_CSD_ETIMEOUT	0x00012326	Operation timed out.
QMI_CSD_ENOTFOUND	0x00012327	Not found.
QMI_CSD_EBADSTATE	0x00012328	Operation cannot proceed due to an improper state.
QMI_CSD_EQADSP	0x00012329	Qualcomm aDSP return error status.

## B CSD Voice Media IDs

Table B-1 lists the media IDs used to set the vocoder type for CSD voice.

**Table B-1 CSD Voice Media IDs**

Name	Value	Description
QMI_CSD_MEDIA_ID_NONE	0x00010FC0	No media type.
QMI_CSD_MEDIA_ID_13K_MODEM	0x00010FC1	CDMA variable 13K vocoder modem format.
QMI_CSD_MEDIA_ID_EVRC_MODEM	0x00010FC2	CDMA enhanced variable rate vocoder modem format.
QMI_CSD_MEDIA_ID_4GV_NB_MODEM	0x00010FC3	CDMA fourth-generation narrowband vocoder modem format.
QMI_CSD_MEDIA_ID_4GV_WB_MODEM	0x00010FC4	CDMA fourth-generation wideband vocoder modem format.
QMI_CSD_MEDIA_ID_4GV_NW_MODEM	0x00010FC5	CDMA fourth-generation narrow-wide vocoder modem format.
QMI_CSD_MEDIA_ID_AMR_NB_MODEM	0x00010FC6	UMTS adaptive multirate narrowband vocoder modem format.
QMI_CSD_MEDIA_ID_AMR_WB_MODEM	0x00010FC7	UMTS adaptive multirate wideband vocoder modem format.
QMI_CSD_MEDIA_ID_EFR_MODEM	0x00010FC8	GSM enhanced full-rate vocoder modem format.
QMI_CSD_MEDIA_ID_FR_MODEM	0x00010FC9	GSM full-rate vocoder modem format.
QMI_CSD_MEDIA_ID_HR_MODEM	0x00010FCA	GSM half-rate vocoder modem format.
QMI_CSD_MEDIA_ID_PCM_NB	0x00010FCB	Linear pulse code modulation narrowband (16-bit, little-endian).
QMI_CSD_MEDIA_ID_PCM_WB	0x00010FCC	Linear pulse code modulation wideband (16-bit, little-endian).
QMI_CSD_MEDIA_ID_G711_ALAW	0x00010FCD	G.711 A-law; contains two 10-millisecond vocoder frames.
QMI_CSD_MEDIA_ID_G711_MULAW	0x00010FCE	G.711 Mu-law; contains two 10-millisecond vocoder frames.
QMI_CSD_MEDIA_ID_G729	0x00010FD0	G.729AB; contains two 10-millisecond vocoder frames.
QMI_CSD_MEDIA_ID_G722	0x00010FD1	G.722; contains one 20-millisecond vocoder frame.

## C CSD Voice Network IDs

---

Table C-1 lists the network IDs for CSD voice.

**Table C-1 CSD Voice Network IDs**

Name	Value	Description
QMI_CSD_NETWORK_ID_DEFAULT	0x00010037	Default network.
QMI_CSD_NETWORK_ID_CDMA_NB	0x00010021	CDMA narrowband network.
QMI_CSD_NETWORK_ID_CDMA_WB	0x00010022	CDMA wideband network.
QMI_CSD_NETWORK_ID_CDMA_WV	0x00011100	CDMA WideVoice network.
QMI_CSD_NETWORK_ID_GSM_NB	0x00010023	GSM narrowband network.
QMI_CSD_NETWORK_ID_GSM_WB	0x00010024	GSM wideband network.
QMI_CSD_NETWORK_ID_GSM_WV	0x00011101	GSM WideVoice network.
QMI_CSD_NETWORK_ID_WCDMA_NB	0x00010025	WCDMA narrowband network.
QMI_CSD_NETWORK_ID_WCDMA_WB	0x00010026	WCDMA wideband network.
QMI_CSD_NETWORK_ID_WCDMA_WV	0x00011102	WCDMA WideVoice network.
QMI_CSD_NETWORK_ID_VOIP_NB	0x00011240	VoIP narrowband network.
QMI_CSD_NETWORK_ID_VOIP_WB	0x00011241	VoIP wideband network.
QMI_CSD_NETWORK_ID_VOIP_WV	0x00011242	VoIP WideVoice network.

# D Vocoder Rate Modulation Ratio Equation

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This appendix provides vocoder rate modulation information to be used with the QMI\_CSD\_IOCTL\_VS\_CMD\_SET\_ENC\_RATE\_MODULATION\_REQ command described in Section 3.35.

The equation for the vocoder rate modulation ratio is:

$$\text{ratio} = 2X+1 / 2(X+1)$$

Where:

- X is S or 1/S depending on the option selected.
- S is the rate limit factor. S is an integer that causes the ratio, when multiplied by the 14.4 kbps (full rate), to become the desired average bitrate.

For convenience, some pre-calculated modes for EVRC are:

0x00000000:

Target 14.4 kbps (8/8 rate) on the average.

Bit values ORed:

- 0x00000000 – Vocoder rate modulation disabled.

0x0000000F:

Target 12.2 kbps (7/8 rate) on the average.

Bit values ORed:

- 0x00000001 – Vocoder rate modulation enabled.
- 0x00000002 – Select X=S.
- 0x0000000C – Rate limit factor: S=3.

0x00000007:

Target 11.2 kbps (6/8 rate) on the average.

Bit values ORed:

- 0x00000001 – Vocoder rate modulation enabled.
- 0x00000002 – Select X=S.
- 0x00000004 – Rate limit factor: S=1.

0x00000005:

Target 9.0 kbps (5/8 rate) on the average.

Bit values ORed:

- 0x00000001 – Vocoder rate modulation enabled.
- 0x00000000 – Select  $X=1/S$ .
- 0x00000004 – Rate limit factor:  $S=3$ .

0x00000003:

Target 7.2 kbps (4/8 rate) on the average (1/2 rate is not supported for EVRC; 0x0000 must be used).

Bit values ORed:

- 0x00000001 – Vocoder rate modulation enabled.
- 0x00000001 – Select  $X=S$ .
- 0x00000000 – Rate limit factor:  $S=0$ .

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# E CSD Audio Format Types

Table E-1 lists the format types for CSD audio.

**Table E-1 CSD Audio Format Types**

Name	Value	Description
QMI_CSD_AS_FORMAT_UNKNOWN	0	Unknown
QMI_CSD_AS_FORMAT_PCM	1	PCM
QMI_CSD_AS_FORMAT_ADPCM	2	ADPCM
QMI_CSD_AS_FORMAT_MP3	3	MP3
QMI_CSD_AS_FORMAT_RA	4	RA
QMI_CSD_AS_FORMAT_WMA	5	WMA
QMI_CSD_AS_FORMAT_AAC	6	AAC
QMI_CSD_AS_FORMAT_MIDI	7	MIDI
QMI_CSD_AS_FORMAT_YADPCM	8	YADPCM
QMI_CSD_AS_FORMAT_QCELP8K	9	QCELP8K
QMI_CSD_AS_FORMAT_AMRNB	10	AMRNB
QMI_CSD_AS_FORMAT_AMRWB	11	AMRWB
QMI_CSD_AS_FORMAT_EVRC	12	EVRC
QMI_CSD_AS_FORMAT_WMAPRO	13	WMAPRO
QMI_CSD_AS_FORMAT_QCELP13K	14	QCELP13K
QMI_CSD_AS_FORMAT_SBC	15	SBC
QMI_CSD_AS_FORMAT_EVRCB	16	EVRCB
QMI_CSD_AS_FORMAT_AMRWBPLUS	17	AMRWBPLUS
QMI_CSD_AS_FORMAT_AC3	18	AC3
QMI_CSD_AS_FORMAT_EVRCWB	19	EVRCWB
QMI_CSD_AS_FORMAT_FLAC	20	FLAC
QMI_CSD_AS_FORMAT_VORBIS	21	VORBIS
QMI_CSD_AS_FORMAT_G711ALAW	22	G.711 A-law
QMI_CSD_AS_FORMAT_G711ULAW	23	G.711 Mu-law
QMI_CSD_AS_FORMAT_G729A	24	G.729A
QMI_CSD_AS_FORMAT_DTMF	25	DTMF
QMI_CSD_AS_FORMAT_GSMFR	26	GSMFR
QMI_CSD_AS_FORMAT_EAC3	27	EAC3

# F CSD Audio Stream AMR-WB and AMR-WB+ Band Modes

Table F-1 lists the band modes supported for AMR-WB+ Rx settings. For backward compatibility, definitions for AMR-WB modes are maintained as is.

**Table F-1 CSD Audio Stream AMR-WB and AMR-WB+ Band Modes**

Name	Description
QMI_CSD_AS_FMT_AMR_BM_WB0	AMRWB mode 0 (6600 bps)
QMI_CSD_AS_FMT_AMR_BM_WB1	AMRWB mode 1 (8850 bps)
QMI_CSD_AS_FMT_AMR_BM_WB2	AMRWB mode 2 (12650 bps)
QMI_CSD_AS_FMT_AMR_BM_WB3	AMRWB mode 3 (14250 bps)
QMI_CSD_AS_FMT_AMR_BM_WB4	AMRWB mode 4 (15850 bps)
QMI_CSD_AS_FMT_AMR_BM_WB5	AMRWB mode 5 (18250 bps)
QMI_CSD_AS_FMT_AMR_BM_WB6	AMRWB mode 6 (19850 bps)
QMI_CSD_AS_FMT_AMR_BM_WB7	AMRWB mode 7 (23050 bps)
QMI_CSD_AS_FMT_AMR_BM_WB8	AMRWB mode 8 (23850 bps)
QMI_CSD_AS_FMT_AMR_BM_WB9	AMRWB mode 9 (the silence indicator)
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS10	AMR-WB+ mode 10 (13600 bps)
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS11	AMR-WB+ mode 11 (18000 bps stereo)
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS12	AMR-WB+ mode 12 (24000 bps)
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS13	AMR-WB+ mode 13 (24000 bps stereo)
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS14	AMR-WB+ mode 14 (frame erasure)
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS15	AMR-WB+ mode 15 (no data)
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS16	AMR-WB+ mode 16
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS17	AMR-WB+ mode 17
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS18	AMR-WB+ mode 18
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS19	AMR-WB+ mode 19
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS20	AMR-WB+ mode 20
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS21	AMR-WB+ mode 21
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS22	AMR-WB+ mode 22
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS23	AMR-WB+ mode 23
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS24,	AMR-WB+ mode 24
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS25,	AMR-WB+ mode 25
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS26,	AMR-WB+ mode 26
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS27	AMR-WB+ mode 27
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS28	AMR-WB+ mode 28
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS29	AMR-WB+ mode 29
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS30	AMR-WB+ mode 30
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS31	AMR-WB+ mode 31

**Table F-1 CSD Audio Stream AMR-WB and AMR-WB+ Band Modes (cont.)**

<b>Name</b>	<b>Description</b>
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS32	AMR-WB+ mode 32
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS33	AMR-WB+ mode 33
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS34	AMR-WB+ mode 34
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS35	AMR-WB+ mode 35
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS36	AMR-WB+ mode 36
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS37	AMR-WB+ mode 37
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS38	AMR-WB+ mode 38
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS39	AMR-WB+ mode 39
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS40	AMR-WB+ mode 40
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS41	AMR-WB+ mode 41
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS42	AMR-WB+ mode 42
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS43	AMR-WB+ mode 43
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS44	AMR-WB+ mode 44
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS45	AMR-WB+ mode 45
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS46	AMR-WB+ mode 46
QMI_CSD_AS_FMT_AMR_BM_WB_PLUS47	AMR-WB+ mode 47

# G CSD Audio Stream AMR Frame Formats

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Table G-1 lists the AMR frame formats for the CSD audio stream.

**Table G-1 CSD Audio Stream AMR Frame Formats**

Name	Description
QMI_CSD_AS_FMT_AMR_FF_CONFORMANCE (0)	AMR conformance (standard) format
QMI_CSD_AS_FMT_AMR_FF_IF1	AMR interface format 1
QMI_CSD_AS_FMT_AMR_FF_IF2	AMR interface format 2
QMI_CSD_AS_FMT_AMR_FF_FSF	AMR file storage format
QMI_CSD_AS_FMT_AMR_FF_RTP,	Real-Time Transport Protocol payload
QMI_CSD_AS_FMT_AMR_FF_ITU	ITU format
QMI_CSD_AS_FMT_AMR_WB_PLUS_FF_TIF	AMR-WB+ transport interface format
QMI_CSD_AS_FMT_AMR_WB_PLUS_FF_FSF	AMR-WB+ file storage format

# H CSD Audio Stream AMR-WB+ Internal Sampling Frequency Index

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Table H-1 provides the AMR-WB+ Internal Sampling Frequency (ISF) index for the CSD audio stream.

**Table H-1 CSD Audio Stream AMR-WB+ Internal Sampling Frequency Index**

Name	Value	Description
QMI_CSD_AS_FMT_AMR_WB_PLUS_ISF_0	0	N/A
QMI_CSD_AS_FMT_AMR_WB_PLUS_ISF_1	1	12800 Hz
QMI_CSD_AS_FMT_AMR_WB_PLUS_ISF_2	2	14400 Hz
QMI_CSD_AS_FMT_AMR_WB_PLUS_ISF_3	3	16000 Hz
QMI_CSD_AS_FMT_AMR_WB_PLUS_ISF_4	4	17067 Hz
QMI_CSD_AS_FMT_AMR_WB_PLUS_ISF_5	5	19200 Hz
QMI_CSD_AS_FMT_AMR_WB_PLUS_ISF_6	6	21333 Hz
QMI_CSD_AS_FMT_AMR_WB_PLUS_ISF_7	7	24000 Hz
QMI_CSD_AS_FMT_AMR_WB_PLUS_ISF_8	8	25600 Hz
QMI_CSD_AS_FMT_AMR_WB_PLUS_ISF_9	9	28800 Hz
QMI_CSD_AS_FMT_AMR_WB_PLUS_ISF_10	10	32000 Hz
QMI_CSD_AS_FMT_AMR_WB_PLUS_ISF_11	11	34133 Hz
QMI_CSD_AS_FMT_AMR_WB_PLUS_ISF_12	12	36000 Hz
QMI_CSD_AS_FMT_AMR_WB_PLUS_ISF_13	13	38400 Hz

# I CSD Windows Media Audio 10 Pro Channel Bitfields

Table I-1 lists the Windows Media Audio 10 Pro multiple-channel bitfield definitions for CSD audio.

**Table I-1 Multiple-channel configuration settings for Windows Media Audio 9 Pro**

Constant	Value	Description
QMI_CSD_AS_WMA_MULTI_CHANNEL_FL	0x00000001	Front left channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_FR	0x00000002	Front right channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_FC	0x00000004	Front center channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_LFE	0x00000008	Low frequency effects channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_LB	0x00000010	Back left channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_RB	0x00000020	Back right channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_FLCL	0x00000040	Front left center channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_FRCL	0x00000080	Front right center channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_BC	0x00000100	Back center channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_SL	0x00000200	Surround left channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_SR	0x00000400	Surround right channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_TC	0x00000800	Top center channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_TFL	0x00001000	Top front center channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_TFR	0x00002000	Top front left channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_TFR	0x00004000	Top front right channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_TBL	0x00008000	Top back left channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_TBC	0x00010000	Top back center channel bitfield.
QMI_CSD_AS_WMA_MULTI_CHANNEL_TBR	0x00020000	Top back right channel bitfield.
QMI_CSD_AS_WMA_CHANNEL_MSB_RESERVED	0x80000000	Most significant bit reserved channel bitfield.

# J CSD Windows Media Audio 10 Pro

## Multiple-Channel Configurations

Table J-1 lists the Windows Media Audio 10 Pro common multichannel configuration settings for CSD audio.

**Table J-1 Multiple-channel configuration settings for Windows Media Audio 10 Pro**

Constant	Value	Description
QMI_CSD_AS_WMA_CHANNEL_CONFIG_NULL	-1	No downmixing channel configuration selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL	0x4	Front center speaker is selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR	0x3	Front left and front right speakers are selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR_FC	0x7	Front left, front right and front center speakers are selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR_BL_BR	0x33	Front left, front right, back left and back right speakers are selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR_FC_BC	0x107	Front left, front right, front center and back center speakers are selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR_FC_SL_SR	0x0607	Front left, front right, front center, side left and side right speakers are selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR_FC_BL_BR	0x0037	Front left, front right, front center, back left and back right speakers are selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR_FC_LFE_SL_SR	0x60F	Front left, front right, front center, low frequency, side left and side right speakers are selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR_FC_LFE_BL_BR	0x3F	Front left, front right, front center, low frequency, back left and back right speakers are selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR_FC_BC_SL_SR	0x707	Front left, front right, front center, back center, side left and side right speakers are selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR_FC_BL_BR_BC	0x137	Front left, front right, front center, back left, back right and back center speakers are selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR_LFE_BC_SL_SR	0x70F	Front left, front right, low frequency, back center, side left and side right speakers are selected.

**Table J-1 Multiple-channel configuration settings for Windows Media Audio 10 Pro (cont.)**

Constant	Value	Description
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR_FC_LFE_BL_BR_BC	0x13F	Front left, front right, front center, low frequency, back left, back right and back center speakers are selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR_FC_BL_BR_SL_SR	0x637	Front left, front right, front center, back left, back right, side left and side right speakers are selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR_FC_BL_BR_FLC_FRC	0xF7	Front left, front right, front center, low frequency, back left, back right, side left and side right speakers are selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR_FC_LFE_BL_BR_SL_SR	0x63F	Front left, front right, front center, low frequency, back left, back right, side left and side right speakers are selected.
QMI_CSD_AS_WMA_CHANNEL_CONFIG_FL_FR_FC_LFE_BL_BR_FLC_FRC	0xFF	Front left, front right, front center, low frequency, back left, back right, front left of center and front right of center speakers are selected.



# K CSD EAC3 Multiple-Channel Configurations

Table K-1 lists the EAC3 multiple-channel configuration settings for CSD audio.

**Table K-1 Multiple-channel configuration settings for EAC3**

Constant	Value	Description
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_NULL	-1	No downmixing channel configuration selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FC	1	Front center speaker is selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FR	2	Front left and front right speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FR_FC	3	Front left, front right, and front center speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FR_SL	4	Front left, front right, and surround left speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FC_FR_SL	5	Front left, front center, front center, and surround left speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FR_SL_SR	6	Front left, front right, surround left, and surround right speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FC_FR_SL_SR	7	Front left, front center, front right, surround left, and surround right speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FC_FR_CVH	8	Front left, front center, front right, and center vertical height speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FR_SL_SR_ST	9	Front left, front right, surround left, surround right, and surround top speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FC_FR_SL_SR_ST	10	Front left, front center, front right, surround left, surround right, and surround top speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FC_FR_SL_SR_CVH	11	Front left, front center, front right, surround left, surround right, and center vertical height speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FC_FR_CL_CR	12	Front left, front center, front right, center left, and center right speakers are selected.

**Table K-1 Multiple-channel configuration settings for EAC3 (cont.)**

Constant	Value	Description
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FR_SL_SR_LW_RW	13	Front left, front right, surround left, surround right, left wide, and right wide speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FR_SL_SR_LVH_RVH	14	Front left, front right, surround left, surround right, left vertical height, and right vertical height speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FR_SL_SR_SLD_SRD	15	Front left, front right, surround left, surround right, surround left direct, and surround right direct speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FR_SL_SR_SLR_SRR	16	Front left, front right, surround left, surround right, surround left rear, and surround right rear speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FR_SL_SR_CL_CR	17	Front left, front right, surround left, surround right, center left, and center right speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FC_FR_SL_SR_LW_RW	18	Front left, front center, front right, surround left, surround right, left wide, and right wide speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FC_FR_SL_SR_LVH_RVH	19	Front left, front center, front right, surround left, surround right, left vertical height, and right vertical height speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FC_FR_SL_SR_SLD_SRD	20	Front left, front center, front right, surround left, surround right, surround left direct, and surround right direct speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FC_FR_SL_SR_SLR_SRR	21	Front left, front center, front right, surround left, surround right, surround left rear, and surround right rear speakers are selected.
QMI_CSD_AS_EAC3_CHANNEL_CONFIG_FL_FC_FR_SL_SR_TS_CVH	22	Front left, front center, front right, surround left, surround right, surround top, and center vertical height speakers are selected.

# L References

## L.1 Related Documents

Title	Number
<b>Qualcomm Technologies</b>	
<i>QMI Client API Interface Specification</i>	80-N1123-1
<i>QMI Common Service Interface API Interface Specification</i>	80-N1123-2
<i>Qualcomm Messaging Interface (QMI) Architecture</i>	80-VB816-1
<i>Core Sound Driver API Interface Specification</i>	80-N4404-1
<b>Standards</b>	
<i>Coding of speech at 8 kbit/s using conjugate-structure algebraic-code-excited linear prediction (CS-ACELP)</i>	ITU-T G.729AB
<i>Pulse code modulation (PCM) of voice frequencies</i>	ITU-T G.711

## L.2 Acronyms and Terms

Acronym or term	Definition
4GV-NB	fourth-generation narrowband vocoder
4GV-WB	fourth-generation wideband vocoder
AAC	advanced audio codec
ADIF	audio data interchange format
ADPCM	adaptive differential pulse code modulation
ADTS	audio data transport stream
AFE	audio front end
AMR	adaptive multirate codec
AMR-WB+	extended adaptive multirate wideband
ANC	active noise cancellation
AOT	ahead of time
AV	audio/video
BSAC	bit-sliced arithmetic coding
CSD	core sound driver
DSP	digital signal processor
DTMF	dual-tone multifrequency
DTX	discontinuous transmission
EFR	enhanced full rate
EOS	end of stream
EQ	equalizer
EVRC	enhanced variable rate codec
FLAC	free lossless audio codec

Acronym or term	Definition
GUID	globally unique identifier
HCO	hearing carry-over
HCR	Huffman Codeword Reordering
IOCTL	I/O control
ISDB-T	integrated services digital broadcasting – terrestrial
ITU	International Telecommunications Union
LC	lossy compression
LOAS	low overhead audio stream
LSF	line spectral frequency
MD5	RSA Data Security, Inc. MD5 Message-Digest Algorithm
MIDI	musical instrument digital interface
PCM	pulse code modulation
PP	post processing
PS	parametric stereo
QCELP	Qualcomm code excited linear prediction
QCPR	Qconcert plus reverb
RT	real-time
RVLC	reversible variable length coding
SBC	subband coding
SBR	spectral band replication
SCE	single channel element
SNR	signal-to-noise ratio
SPA	spectrum analyzer
SR	sample rate
TIF	transport interface format
TLV	type-length-value
TTY	teletypewriter
TSM	time scale modification
VC	voice context
VCB11	Virtual CodeBook
VCO	voice carry-over
VM	voice manager
VoIP	voice over IP
VS	voice stream
WMA	Windows Media® Audio
YADPCM	raw Yamaha 4-bit ADPCM format