AT Commands Compatibility Guide

AirPrime Q2686, Q2687, HL6528x

SIERRA WIRELESS®

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Document History

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1. Overview

This document summarizes the compatibility between AT commands supported by the AirPrime Q2686x and Q2687x with those supported by the HL6528x embedded modules.

Since the Q26 and HL series use different chipsets and telecom stacks, the real time behavior or response of the modules may vary from one command to another. This document is intended to help the system integrator porting the AT command set between the different modules by identifying differences if any, as well as indicates full or partial compatibility.

The document is divided into two main parts:

- The AT commands compatibility table in section 3 gives a quick overview of the compatibility between AT commands, and
- Description of each of the commands listed in section 3 are enumerated in succeeding sections.

A color scheme is used to indicate the degree of compatibility between AT commands as described in the following table.

Table 1. Compatibility Guide

Color	Description
●	The command in the HL6528x is the same as the command in the Q2686x and Q2687x where all parameter values supported in the Q2686x and Q2687x are also supported in HL6528x. Note that additional parameters may be supported by the HL6528x. Such cases are indicated with a note and a reference to document [1] AirPrime HL6 and HL8 Series AT Commands Interface Guide.
●	Command parameters in the Q2686x and Q2687x are not fully compatible with the HL6528x. Only compatible parameters and/or values are presented. Document [1] AirPrime HL6 and HL8 Series AT Commands Interface Guide should be consulted for additional parameters and/or value description.
●	The command is neither compatible nor supported in the HL6628x.

This color scheme is applied in the command description for Q2686x and Q2687x in order to clearly identify the parameters that have to be adapted.

Additional points to remember in using this guide include:

1. Commands are described based on compatibility with the Q2686x and Q2687x.
2. Due to the complete behavior change of some AT commands, document [1] AirPrime HL6 and HL8 Series AT Commands Interface Guide should be referred to for detailed description of how commands are used and functions in the HL6548x.
3. An HL6528x redesign is currently under development; a separate column has been included in section 3 Commands Compatibility Table to denote AT command compatibility with the HL6548x redesigned module with data based on the projected initial release of the redesigned module. This information is subject to change as per redesign module releases.
4. Document [1] AirPrime HL6 and HL8 Series AT Commands Interface Guide should be used as a reference beyond this document.

2. Related Documentation

All reference documents are available in the Source.

2.1. References for AirPrime HL6528x

[1] AirPrime HL6 and HL8 Series AT Commands Interface Guide
Reference number: 4114680

2.2. References for AirPrime Q2686x and Q2687x

[2] AT Commands Interface Guide for Firmware 7.52
Reference number: 4111843

[3] Internet AT Command User Guide Internet Application 5.56
Reference number: 4111846

[4] Location Library for Open AT Framework AT Commands
Reference number: 4111879

[5] Jamming Detection Security Plug-In User Manual
Reference number: WM_DEV_SEC_UGD_003

[6] Security AT Commands for Open AT Application Framework Interface Guide
Reference number: 4112704

3. Commands Compatibility Table

The following table presents all AT commands available in the AirPrime Q2686x and Q2687x along with equivalent AT commands available in the AirPrime HL6528x.

Table 2. Compatibility Table

Description	Q2686x and Q2687x AT Command	HL6528x AT Command	Compatibility	
			HL6528x	HL6528RD
Basic Commands				
Attention Command	AT	AT	🟢	🟢
Available Repeat Last Command	A/	A/	🟢	🟢
Identification Commands				
Manufacturer Identification	+CGMI	+CGMI	🟢	🟢
Request Model Identification	+CGMM	+CGMM	🟢	🟢
Hardware Version	+WHWV	-	🔴	🔴
Date of Production	+WDOP	-	🔴	🔴
Write IMEI	+WIMEI	+CGSN	🟡	🟡
Embedded Serial Number	+WMSN	+KGSN	🟡	🟡
Request Revision Identification	+CGMR	+CGMR	🟢	🟢
Request Identification Information	I	I	🟡	🟡
Write IMEI SVN	+WSVN	-	🔴	🔴
Capabilities List	+GCAP	+GCAP	🟢	🟢
Open AT Framework Commands				
Downloading	+WDWL	-	🔴	🔴
Open AT Control	+WOPEN	-	🔴	🔴
Tasks Resume	+WOPENRES	-	🔴	🔴
Global Configuration Commands				
Report Mobile Equipment Errors	+CMEE	+CMEE	🟡	🟡
Hardware Configuration	+WHCNF	-	🔴	🔴
Embedded Module Behaviour Configuration	+WBHV	-	🔴	🔴
Features Management	+WFM	-	🔴	🔴
Commercial Feature Management	+WCFM	-	🔴	🔴
Sierra Wireless SLEEP Mode	+W32K	+KSLEEP	🟡	🟡
Power Off	+CPOF	+CPOF	🟡	🟡
Set Phone Functionality	+CFUN	+CFUN	🟡	🟡
Sierra Wireless Reset	+WRST	+KRST	🟡	🟡
Save Configuration	&W	&W	🟡	🟡
Restore Factory Settings	&F	&F	🟢	🟢

Description	Q2686x and Q2687x AT Command	HL6528x AT Command	Compatibility	
			HL6528x	HL6528RD
Default Configuration	ATZ	ATZ	🟡	🟡
Display Configuration	&V	&V	🟡	🟡
Sierra Wireless Custom Character Set	+WCCS	-	🔴	🔴
Select TE Character Set	+CSCS	+CSCS	🟡	🟡
Sierra Wireless Phonebook Character Set	+WPCS	+CSCS	🟡	🟡
Set Language	+CLAN	+CLAN	🟡	🟡
Language Event	+CLAE	-	🔴	🔴
Select Type of Address	+CSTA	+CSTA	🟢	🟢
Cellular Text Telephone Modem	+WCTM	-	🔴	🔴
Sierra Wireless Debug Interface Management	+WDEBUG	-	🔴	🔴
Digital to Analog Converter	+DAC	-	🔴	🔴
Automatic Boost Mode	+WCPS	-	🔴	🔴
Auto Shutdown	+WASR	-	🔴	🔴
IP Stack Settings	+WIPS	-	🔴	🔴
Sierra Wireless Development Mode	+WDM	-	🔴	🔴
Embedded Module Status Commands				
General Indications	+WIND	-	🔴	🔴
Phone Activity Status	+CPAS	+CPAS	🟢	🟢
SIM Holder Status	+WSHS	-	🔴	🔴
Indicator Control	+CIND	+CIND	🟡	🟡
Mobile Equipment Event Reporting	+CMER	+CMER	🟡	🟡
Mobile Equipment Control Mode	+CMEC	+CMEC	🟡	🟡
Sierra Wireless Status Request	+WSTR	-	🔴	🔴
Temperature Monitoring Report	+WTMR	+KTEMPMON	🟡	🔴
Temperature Command	+WTEMP	-	🔴	🔴
Sierra Wireless Critical Error Report	+WCER	-	🔴	🔴
Serial Port Commands				
Echo	ATE	ATE	🟢	🟢
Fixed DTE Rate	+IPR	+IPR	🟡	🟡
DTE-DCE Character Framing	+ICF	+ICF	🔴	🔴
DTE-DCE Local Flow Control	+IFC	-	🔴	🔴
Result Code Suppression	ATQ	ATQ	🟢	🟢
DCE Response Format	ATV	ATV	🟢	🟢
Set DCD Signal	&C	&C	🟢	🟢
Set DTR Signal	&D	&D	🟢	🟢
Set DSR Signal	&S	&S	🟡	🟡

Description	Q2686x and Q2687x AT Command	HL6528x AT Command	Compatibility	
			HL6528x	HL6528RD
Sierra Wireless Ring Indicator Mode	+WRIM	-	🔴	🔴
Back to Online Mode	ATO	ATO	🟡	🟡
Multi-flow Management	+WMFM	-	🔴	🔴
Multiplexing Mode	+CMUX	+CMUX	🟡	🔴
Sierra Wireless USB Configuration	+WUSB	-	🔴	🔴
Security Commands				
Enter PIN	+CPIN	+CPIN	🟡	🟡
Enter PIN2	+CPIN2	+EPIN2	🔴	🔴
PIN Remaining Attempt Number	+CPINC	*PSPRAS	🟡	🟡
Change Password	+CPWD	+CPWD	🟡	🟡
Facility Lock	+CLCK	+CLCK	🟡	🟡
Sierra Wireless Lock	+WLCK	-	🔴	🔴
Time Management Commands				
Clock Management	+CCLK	+CCLK	🟡	🟡
Alarm Management	+CALA	+CALA	🟡	🟡
GSM Network Commands				
Signal Quality	+CSQ	+CSQ	🟢	🟢
Network Registration	+CREG	+CREG	🟡	🟡
Cell Environment description	+CCED	-	🔴	🔴
Sierra Wireless Multi-band Selection Command	+WMBS	-	🔴	🔴
Registration Control	+WREGC	-	🔴	🔴
Sierra Wireless Location	+WLOC	-	🔴	🔴
Sierra Wireless Scan	+WSCAN	-	🔴	🔴
Abort Command	+WAC	-	🔴	🔴
Band Services command	+WUBS	-	🔴	🔴
Wireless Service Management	+WWSM	-	🔴	🔴
Wireless Power Level	+WPOW	-	🔴	🔴
Error Code	$ARMEE	-	🔴	🔴
Call Control Commands				
Dial Command to a Specific Number	D	D	🟡	🟡
Direct Dial Command using Phonebook Index	D	D	🟢	🟢
Direct Dial Command using a Phonebook Entry Name	D	D	🔴	🔴
Redial Last Telephone Number	DL	DL	🔴	🔴
Answer a Call	A	A	🟢	🟢
Hang-Up Command	H	H	🟡	🟡

Description	Q2686x and Q2687x AT Command	HL6528x AT Command	Compatibility	
			HL6528x	HL6528RD
Sierra Wireless Hang-up	+WATH	-	🔴	🔴
Extended Error Report	+CEER	+CEER	🟡	🟡
Automatic Dialing with DTR	%Dn	-	🔴	🔴
Automatic Answer	S0	S0	🟢	🟢
Incoming Call Bearer	+CICB	-	🔴	🔴
Single Numbering Scheme	+CSNS	+CSNS	🟡	🟡
Service Reporting Control	+CR	+CR	🟢	🟢
Cellular Result Codes	+CRC	+CRC	🟢	🟢
Data Commands				
Bearer Type Selection	+CBST	+CBST	🟡	🔴
DTE-DCE Local Rate Reporting	+ILRR	-	🔴	🔴
Radio Link Protocol Parameters	+CRLP	+CRLP	🟡	🟡
Other Radio Link Parameters	+DOPT	-	🔴	🔴
Select Mode	+FCLASS	#CLS	🟡	🟡
Select Data Compression	%C	-	🔴	🔴
V42 Bis Data Compression	+DS	+DS	🔴	🔴
V42 Bis Data Compression Report	+DR	-	🔴	🔴
Select Data Error Correcting Mode	\N	\N	🟡	🔴
GPRS Commands				
GPRS Mobile Station Class	+CGCLASS	+CGCLASS	🟡	🟡
GPRS Parameters Customization	+WGPRS	-	🔴	🔴
Define PDP Context	+CGDCONT	+CGDCONT	🟡	🟡
GPRS Attach or Detach	+CGATT	+CGATT	🟡	🟡
PDP Context Activate or Deactivate	+CGACT	+CGACT	🟢	🟢
Request GPRS IP Service	D	D	🔴	🔴
Enter Data State	+CGDATA	+CGDATA	🟡	🟡
GPRS Hang-Up Command GH	GH	-	🔴	🔴
Manual Response to a Network Request for PDP Manual Context Activation	+CGANS	+CGANS	🔴	🔴
Automatic Response to a Network Request for PDP Context Activation	+CGAUTO	+CGAUTO	🔴	🔴
Quality of Service Profile (Minimum acceptable)	+CGQMIN	+CGQMIN	🟡	🟡
Quality of Service Profile (Requested)	+CGQREQ	+CGQREQ	🟡	🟡
PDP Context Modify	+CGCMOD	+CGCMOD	🔴	🔴

Description	Q2686x and Q2687x AT Command	HL6528x AT Command	Compatibility	
			HL6528x	HL6528RD
GPRS Network Registration Status	+CGREG	+CGREG	●	●
GPRS Event Reporting	+CGEREP	+CGEREP	●	●
Select Service for MO SMS Messages	+CGSMS	+CGSMS	●	●
Show PDP Address	+CGPADDR	+CGPADDR	●	●
GSM/GPRS Tx Burst Indication	+WTBI	+WMTXPOWER	●	●
3G Quality of Service Profile (Requested)	+CGEQREQ	+CGEQREQ	●	●
3G Quality of Service Profile (Minimum acceptable)	+CGEQMIN	+CGEQMIN	●	●
3G Quality of Service Profile (Negotiated)	+CGEQNEG	-	●	●
Authentication Protocol	+WPPP	+WPPP	●	●
PLMN Commands				
Selection of Preferred PLMN list	+CPLS	+CPLS	●	●
Operator Selection	+COPS	+COPS	●	●
Preferred Operator List	+CPOL	+CPOL	●	●
Operator List Management	+WOLM	-	●	●
Read Operator Name	+WOPN	-	●	●
Read Operator Name	+COPN	+COPN	●	●
Automatic Time Zone Update	+CTZU	+CTZU	●	●
AT&T Command	+PACSP	-	●	●
Phonebooks Commands				
Select Phonebook Memory Storage	+CPBS	+CPBS	●	●
Contact Selector	+WCOS	-	●	●
Write Phonebook Entry	+CPBW	+CPBW	●	●
Read Phonebook Entries	+CPBR	+CPBR	●	●
Find Phonebook Entries	+CPBF	+CPBF	●	●
Phonebook Phone Search	+CPBP	-	●	●
Move Action in Phonebook	+CPBN	-	●	●
Create and Delete a Phonebook Group	+WPGW	-	●	●
Read a Phonebook Group	+WPGR	-	●	●
Settings of a Group	+WPGS	-	●	●
Delete Calls Phonebook	+WDCP	-	●	●
Subscriber Number	+CNUM	+CNUM	●	●
Set Voice Mail Number	+CSVM	+CSVM	●	●
Avoid Phonebook Initialization	+WAIP	-	●	●
Short Message Commands				
Select Message Service	+CSMS	+CSMS	●	●
New Message Indication	+CNMI	+CNMI	●	●

Description	Q2686x and Q2687x AT Command	HL6528x AT Command	Compatibility	
			HL6528x	HL6528RD
Set Text Mode Parameters	+CSMP	+CSMP	●	●
Preferred Message Format	+CMGF	+CMGF	●	●
Preferred Message Storage	+CPMS	+CPMS	●	●
Service Center Address	+CSCA	+CSCA	●	●
Show Text Mode Parameters	+CSDH	+CSDH	●	●
More Messages to Send	+CMMS	+CMMS	●	●
Send Message	+CMGS	+CMGS	●	●
Write Message to Memory	+CMGW	+CMGW	●	●
Send Message From Storage	+CMSS	+CMSS	●	●
Read Message	+CMGR	+CMGR	●	●
List Message	+CMGL	+CMGL	●	●
Delete Message	+CMGD	+CMGD	●	●
New Message Acknowledgement	+CNMA	+CNMA	●	●
Message Status Modification	+WMSC	-	●	●
Un-change SMS Status	+WUSS	-	●	●
Message Overwriting	+WMGO	-	●	●
Copy Messages	+WMCP	-	●	●
Save Settings	+CSAS	+CSAS	●	●
Restore Settings	+CRES	+CRES	●	●
Select Cell Broadcast Message Types	+CSCB	+CSCB	●	●
Cell Broadcast Message Identifiers	+WCBM	-	●	●
SIM Commands				
Card Identification	+CCID	+CCID	●	●
Request IMSI	+CIMI	+CIMI	●	●
Generic SIM Access	+CSIM	+CSIM	●	●
Restricted SIM Access	+CRSM	+CRSM	●	●
Write Language Preference	+WLPW	-	●	●
Read Language Preference	+WLPR	-	●	●
SIM Toolkit Commands				
SIM ToolKit Set Facilities	+STSF	*PSSTKI, *PSSTK	●	●
SIM ToolKit Indication	+STIN	*PSSTKI, *PSSTK	●	●
SIM ToolKit Get Information	+STGI	*PSSTKI, *PSSTK	●	●
SIM ToolKit Give Response	+STGR	*PSSTKI, *PSSTK	●	●
SIM ToolKit Control Response	+STCR	*PSSTKI, *PSSTK	●	●
SIM ToolKit Indication	+STRIL	*PSSTKI, *PSSTK	●	●

Description	Q2686x and Q2687x AT Command	HL6528x AT Command	Compatibility	
			HL6528x	HL6528RD
Supplementary Services Commands				
List Current Calls	+CLCC	+CLCC	🟡	🟡
Call Related Supplementary Services	+CHLD	+CHLD	🟡	🟡
Calling Line Identification Presentation	+CLIP	+CLIP	🟡	🟡
Calling Line Identification Restriction	+CLIR	+CLIR	🟢	🟢
Connected Line Identification Presentation	+COLP	+COLP	🟢	🟢
Supplementary Service Notifications	+CSSN	+CSSN	🟡	🟡
Unstructured Supplementary Service Data	+CUSD	+CUSD	🟢	🟢
Call Forwarding	+CCFC	+CCFC	🟡	🟡
Call Waiting	+CCWA	+CCWA	🟡	🟡
Keypad Control	+CKPD	-	🔴	🔴
Advice Of Charge	+CAOC	+CAOC	🟢	🟢
Accumulated Call Meter	+CACM	+CACM	🟢	🟢
Accumulated Call Meter Maximum	+CAMM	+CAMM	🟢	🟢
Price per Unit and Currency Table	+CPUC	+CPUC	🟢	🟢
Closed User Group	+CCUG	+CCUG	🔴	🔴
Audio Commands				
Speaker and Microphone Selection	+SPEAKER	-	🔴	🔴
Ringer Sound Level	+CRSL	+CRSL	🟢	🟢
Microphone Mute Control	+CMUT	+CMUT	🟢	🟢
Loudspeaker Volume Level	+CLVL	+CLVL	🟢	🟢
Side Tone Modification	+SIDET	+KST	🟡	🔴
Gain Control	+VGR	+VGR	🟡	🔴
Gain Control	+VGT	+VGT	🟡	🔴
Digital Gain Control	+WDGR	+KVGR	🟡	🔴
Digital Gain Control	+WDGT	+KVGT	🟡	🔴
Audio Filter Command	+WADF	-	🔴	🔴
Echo Cancellation	+ECHO	+KECHO	🟡	🟡
Sierra Wireless Voice Rate	+WVR	+WVR	🔴	🔴
DTMF Tone Duration	+VTD	+VTD	🟢	🔴
DTMF Signals	+VTS	+VTS	🟢	🟢
Play Tone	+WTONE	-	🔴	🔴
Play DTMF Tone	+WDTMF	-	🔴	🔴
DTMF Detection Mode	+WDDM	-	🔴	🔴

Description	Q2686x and Q2687x AT Command	HL6528x AT Command	Compatibility	
			HL6528x	HL6528RD
Set Standard Tone	+WSST	-	●	●
Ring Melody Playback	+CRMP	+CRMP	●	●
Sierra Wireless Change Default Melody	+WCDM	-	●	●
Sierra Wireless Change Default Player	+WCDP	-	●	●
Initialize Voice Parameters	+VIP	+VIP	●	●
Auto Tests	&T	+WMAUDIOLOOP	●	●
Auto Diagnostic Start	+WADS	-	●	●
I/O Commands				
Input/Output Management	+WIOM	+KGPIOCFG	●	●
Read GPIO Value	+WIOR	-	●	●
Write GPIO Value	+WIOW	+KGPIO	●	●
Sierra Wireless Interrupt Pin Configuration	+WIPC	-	●	●
Battery Commands				
Analog Digital Converters Measurements	+ADC	+KADC	●	●
Sierra Wireless Battery Charge Management	+WBCM	-	●	●
Sierra Wireless Auto diagnosis	+WDIAG	-	●	●
CPHS Commands				
CPHS Command	+CPHS	*PSVMWN	●	●
Sierra Wireless CPHS Mail Box Number	+WMBN	*PSMBNB	●	●
Sierra Wireless Alternate Line Service	+WALS	*PSALS	●	●
Fax Commands				
Transmit Speed	+FTM	-	●	●
Receive Speed	+FRM	-	●	●
HDLC Transmit Speed	+FTH	-	●	●
HDLC Receive Speed	+FRH	-	●	●
Stop Transmission and Wait	+FTS	-	●	●
Receive Silence	+FRS	-	●	●
Fax class 2 Commands				
Transmit Data	+FTD	-	●	●
Receive Data	+FDR	-	●	●
Transmit Page Punctuation	+FET	-	●	●
Page Transfer Status Parameters	+FTPS	-	●	●
Terminate Session	+FK	-	●	●
Page Transfer Bit Order	+FBOR	-	●	●
Buffer Size Report	+FBUF	-	●	●

Description	Q2686x and Q2687x AT Command	HL6528x AT Command	Compatibility	
			HL6528x	HL6528RD
Copy Quality Checking	+FCQ	-	🔴	🔴
Capability to Receive	+FCR	-	🔴	🔴
Current Session Parameters	+FDIS	-	🔴	🔴
DCE Capabilities Parameters	+FDCC	-	🔴	🔴
Local ID String	+FLID	-	🔴	🔴
Page Transfer Timeout Parameter	+FPHCTO	-	🔴	🔴
Remote Device Management Services Commands				
Device Services Configuration	+WDSC	+WDSC	🟡	🟡
Device Services Error	+WDSE	+WDSE	🟢	🟢
Device Services Fallback	+WDSF	+WDSF	🟢	🟢
Device Services General status	+WDSG	+WDSG	🟢	🟢
Device Services Reply	+WDSR	+WDSR	🟢	🟢
Device Services Session	+WDSS	+WDSS	🟡	🟡
Device Services Indications	+WDSI	+WDSI	🟡	🟡
Device Services Bootstrap	+WDSB	-	🔴	🔴
Device Services Host	+WDSH	-	🔴	🔴
Device Services Local Download	+WDSD	+WDSD	🟡	🟡
Device Services Over-The-Air	+WDSO	-	🔴	🔴
Internet Library General Configuration				
IP Stack Handling	+WIPCFG	+KTCPCFG, +KFTPCFG, +KFTPDCFG, +KUDPCFG, +KHTTPCFG, +KHTTPSCFG	🟡	🟡
Bearers Handling	+WIPBR	+KCNXCFG	🟡	🟡
Internet Library IP Protocol Services				
Service Creation	+WIPCREATE	+KTCPCFG, +KTCPCNX	🟡	🟡
Closing a Service	+WIPCLOSE	+KTCPCLOSE, +KFTPCLOSE, +KFTPDCLOSE, +KUDPCLOSE, +KPOPQUIT, +KHTTPCLOSE, +KHTTPSCLOSE	🟡	🟡
Service Option Handling	+WIPOPT	-	🔴	🔴
Internet Library Data Exchange for Protocol Services				
File Exchange	+WIPFILE		🔴	🔴
Socket Data Exchange	+WIPDATA	+KTCPSND, +KTCPRCV, +KFTPSND, +KFTPRCV, +KUDPSND, +KUDPRCV	🟡	🟡

Description	Q2686x and Q2687x AT Command	HL6528x AT Command	Compatibility	
			HL6528x	HL6528RD
Data Offline Session	+WIPDATARW	-	🔴	🔴
Internet Library Ping Services				
PING Command	+WIPPING	-	🔴	🔴
Location Library Commands*				
Display Location	+GPSHELP	-	🔴	🔴
Configure NMEA Frames Flow	+GPSNMEA	+GPSNMEA	🟡	🔴
Configure PVT Sentences Flow	+GPSPVT	+GPSPVT	🟡	🔴
Save GPS Parameters	+GPSSAVE	-	🔴	🔴
Start (or Restart) GPS	+GPSSTART	+GPSSTART	🟢	🔴
Return Current Application State	+GPSSTATE	-	🔴	🔴
Initialize Location Services	+GPSINIT	+GPSINIT	🟡	🔴
Stop Location Services	+GPSSTOP	+GPSSTOP	🟢	🔴
Set GPS Sleep Mode	+GPSSLEEP	+GPSSLEEP	🟢	🔴
Report Calculated TTFF	+GPSTTFF	+GPSTTFF	🟢	🟢
Release Location Serviced	+GPSRELEASE	+GPSRELEASE	🟢	🔴
Report Software Version	+GPSVERS	+GPSVER	🟡	🔴
Configure Location Service and GPS Receiver	+GPSCONF	+GPSCONF	🟡	🔴
Configure Debug Mode	+GPSDEBUG	-	🔴	🔴
Activate and Configure Aiding Modes	+GPSAID	+GPSAID	🟡	🔴
Configure Core Information	+GPSCORE	+GPSCORE	🟡	🔴
Security Commands				
Initialize Security Delivery	+SSLINIT	-	🔴	🔴
Configure TLS/SSL	+SSLSET	-	🔴	🔴
Set All Parameters Provided via AT+SSLSET	+SSLSETOPTS	-	🔴	🔴
Close Library	+SSLRELEASE	-	🔴	🔴
Return State	+SSLSTATE	-	🔴	🔴
Boost System	+SSLBOOST	-	🔴	🔴
Display Underlying Version	+SSLVERSION	-	🔴	🔴
Network Scan Library Command				
Network Scan	+NWKSCAN	+KNETSCAN	🟡	🔴
Jamming Detection Commands				
Jamming Detection	+WJAM	+KJAM, +KJAMDET	🟡	🔴

* Location commands are only applicable for -G variants of the HL6528x module.

4. Identification Commands

4.1. +IMEI and +CGSN: Write IMEI

Q2686x and Q2687x		HL6528x	
Action command **AT+WIMEI=<IMEI>**	Response	Not available	
Read command **AT+WIMEI?**	Response **+WIMEI: <IMEI>** **OK**	Read command **AT+CGSN**	Response **<IMEI>** **OK**
Test command **AT+WIMEI=?**	Response **OK**	Test command **AT+CGSN=?**	Response **OK**

4.2. +WMSN and +KGSN: Embedded Module Serial Number

Q2686x and Q2687x		HL6528x	
Action command **AT+WMSN**	Response **Serial Number <serial number>** **OK**	Action command **AT+KGSN= <number type>**	Response **<number type> = 3:** **+KGSN: <SN>** **OK** Parameter **<SN>** 14 digits Serial Number
Test command **AT+WMSN=?**	Response **OK**	Test command **AT+KGSN=?**	Response **+KGSN: (list of supported <number type>s)** **OK**

4.3. I: Request Identification Information

Command	Q2686x and Q2687x	HL6528x
Action command **ATI<n>**	Response **Depending on <n>** **OK**	Response **<value> = 0 or omitted:** **<model>** **OK** Parameter **<model>** Model identifier

5. Global Configuration Commands

5.1. +CMEE: Report Mobile Equipment Errors

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CMEE=<n>**	Response **OK**	Response **OK** Parameter **<n>** 0 Disable +CME ERROR: <err> result code and use ERROR instead 1 +CME ERROR: <err> result code and use numeric <err> values
Read command **AT+CMEE?**	Response **+CMEE: <n>** **OK**	Response **+CMEE: <n>** **OK**
Test command **AT+CMEE=?**	Response **+CMEE: (list of supported <n>s)** **OK**	Response **+CMEE: (list of supported <n>s)** **OK**

5.2. +W32K and +KSLEEP: Sierra Wireless SLEEP Mode

Only one parameter is used to define the different sleep modes in the HL6528x instead of 2 parameters as used in the Q2686x and Q2687x. Available modes are described in the HL6528x column.

Q2686x and Q2687x		HL6528x	
Action command **AT+W32K=<mode>[,<DTRSignalUsed>]**	Response **OK**	Action command **AT+KSLEEP=<mngt>**	Response **OK** Parameter **<mngt>** 0 The module doesn't go in sleep mode as long as DTR is active (low level). DTR has to

Q2686x and Q2687x		HL6528x	
			be active to send AT commands. 1 The module decides by itself (internal timing) when it goes in sleep mode. 2 The module never goes in sleep mode regardless of the DTR state.
Read command **AT+W32K?**	Response **+W32K: <mode> [,<DTRSignalUsed>]** **OK**	Read command **AT+KSLEEP?**	Response **+KSLEEP: <mngt>** **OK**

5.3. +CPOF: Power Off

No parameters are required on the HL6528x to put the module in low power mode. The command will switch the module off (not only the stack) without any configuration on the ON/OFF signal.

Q2686x and Q2687x		HL6528x	
Action command **AT+CPOF[=<Mode> [,<Low Power Mode>]]**	Response **OK**	Action command **AT+CPOF**	Response **OK**
Test command **AT+CPOF=?**		Not available	

5.4. +CFUN: Set Phone Functionality

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CFUN=<fun>[,<rst>]**	Response **OK**	Response **OK** Parameter **<fun>** 1 Full functionality 4 Disable phone both transmit and receive RF circuits

Command	Q2686x and Q2687x	HL6528x
Read command **AT+CFUN?**	Response **+CFUN: <fun>** **OK**	Response **+CFUN: <fun>** **OK**
Test command **AT+CFUN=?**	Response **+CFUN: (list of supported <fun>s),(list of supported <rst>s)** **OK**	Response **+CFUN: (list of supported <fun>s), (list of supported <rst>s)** **OK**

5.5. +WRST and +KRST: Sierra Wireless Reset

Different parameters are supported in HL6528x. For more information, refer to document [1] AirPrime HL6 and HL8 Series AT Commands Interface Guide.

Q2686x and Q2687x		HL6528x	
Action command **AT+WRST=<Mode> [,<Delay>]**	Response **OK**	Action command **AT+KRST=<type> [,<time information>, <reset notification>]**	Response **OK** Parameters **<type>** Indicates the type of reset operation 0 Cancel current programmed reset. 1 Program a periodic reset. 2 Program a timely scheduled reset on a daily basis **<time information>** Reset period or a reset time 1-168 hours when <type>=1 - module will reset after hours of time; “HH:MM” when <type>=2 module will reset at this time every day; (HH = hour from 00 to 23, MM = minutes from 00 to 59)

Q2686x and Q2687x		HL6528x	
			<reset notification> Enables the display of a reset notification before module restarts. 0 No notification displayed 1 Notification display
Read command **AT+WRST?**	Response **+WRST: <Mode> [,<Delay>, <RemainTime>]** **OK**	Read command **AT+KRST?**	Response If <type> = 1: **+KRST: 1,<time information>,<reset notification>,<time left>** If <type> = 2: **+KRST=2, <time information>,<reset notification>** If <type> = 0: **+KRST: 0** **OK** Parameter **<time left>** Displays the time left (in minutes) left to reset
Test command **AT+WRST=?**	Response **OK**	Test command **AT+KRST=?**	Response **+KRST=<0,1,2> [,<time information>, <reset notification>]** **OK**

5.6. &W: Save Configuration

Users have the option of saving the configuration in one of the 2 profiles available in the HL6528x. For more information, refer to document [1] AirPrime HL6 and HL8 Series AT Commands Interface Guide.

Q2686x and Q2687x		HL6528x	
Action command **AT&W**	Response **OK**	Action command **AT&W[<value>]**	Response **OK**

Q2686x and Q2687x		HL6528x	
			Parameter **<value>** 0 Save in STORED PROFILE 0 1 Save in STORED PROFILE 1

5.7. Z: Default Configuration

Users have the option of saving the configuration in one of the 2 profiles available in the HL6528x. For more information, refer to document [1] AirPrime HL6 and HL8 Series AT Commands Interface Guide.

Q2686x and Q2687x		HL6528x	
Action command **ATZ**	Response **OK**	Action command **ATZ[<value>]**	Response **OK** Parameter **<value>** 0 Reset and restore user configuration with profile 0 1 Reset and restore user configuration with profile 1

5.8. &V: Display Configuration

Q2686x and Q2687x		HL6528x	
Action command **AT&V[<n>]**	Response **Q:<val1> V:<val2> S0:<val3> S2:<val4> S3:<val5> S4:<val6> S5:<val7> +CR:<val8> +CRC:<val9> +CMEE:<val10> +CBST:<val11> +SPEAKER:<val12> +ECHO:<val13> &C:<val14> &D:<val15> %C:<val16> [+IPR:<val17>] +ICF:<val18> +IFC:<val19>** **OK**	Action command **AT&V[<value>]**	Response **ACTIVE PROFILE:** **<current configuration>** **STORED PROFILE** **0: <user default configuration>** **STORED PROFILE** **1: <manufactory configuration>** **OK** Parameter **<value>** 0 Profile number

5.9. +CSCS: Select TE Character Set

Command	Q2686x and Q2687x	HL6528x
Test command **AT+CSCS= <Character Set>**	Response **OK**	Response **OK** Parameter **<Character Set>** "GSM" GSM default alphabet (GSM 03.38 sub clause 6.2.1) "IRA" Default value
Read command **AT+CSCS?**	Response **+CSCS: <Character Set>** **OK**	Response **+CSCS: <Character Set>** **OK**
Test command **AT+CSCS=?**	Response **+CSCS: (list of supported <Character Set>s)** **OK**	Response **+CSCS: (list of supported <Character Set>s)** **OK**

5.10. +WPCS and +CSCS: Sierra Wireless Phonebook Character Set

Q2686x and Q2687x		HL6528x	
Action command **AT+WPCS= <Character Set>**	Response **OK**	Action command **AT+CSCS= <Character Set>**	Response **OK**
Read command **AT+WPCS?**	Response **+WPCS: <Character Set>** **OK**	Read command **AT+CSCS?**	Response **+CSCS: <Character Set>** **OK**
Test command **AT+WPCS=?**	Response **+WPCS: (list of supported <Character Set>s)** **OK**	Test command **AT+CSCS=?**	Response **+CSCS: (list of supported <Character Set>)** **OK**

5.11. +CLAN: Set Language

Command	Q2686x and Q2687x	HL6528x
Test command **AT+CLAN=<code>**	Response **OK**	Response **OK** Parameter **<code>** "auto" ,"en"
Read command **AT+CLAN?**	Response **+CLAN: <code>** **OK**	Response **+CLAN: <code>** **OK**
Test command **AT+CLAN=?**	Response **+CLAN: (list of supported <code>s)** **OK**	Response **+CLAN: (list of supported <code>s)** **OK**

6. Embedded Module Status Commands

6.1. +CIND: Indicator Control

Command	Q2686x and Q2687x	HL6528x
Read command **AT+CIND?**	Response **+CIND:<battchg>,<signal>,<service>, <message>,<call>,<roam>, <smsfull>** **OK**	Response **+CIND: <battchg>,<signal>, <service>,<call>, <smsfull>** **OK** Parameter **<smsfull>** SMS memory storage 0 Memory available 1 Memory full
Test command **AT+CIND=?**	Response **+CIND: (<descr>, (list of supported <ind>s)) [,(<descr>,(list of supported <ind>s))[,…]]** **OK**	Response **+CIND: ("battchg",(0-5)), ("signal",(0-5)),("service",(0-1)), ("message",(0-1)),("call",(0-1)), ("roam",(0-1)),("smsfull",(0-1))** **OK** Parameter **<roam>** Roaming indicator 0 Home net 1 Roaming

6.2. +CMER: Mobile Equipment Event Reporting

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CMER=[<mode>] [,[<keyp>] [,[<disp>],[<ind>] [,[<bfr>]]]]]**	Response **OK**	Response **OK** Parameters **<mode>** 0 Buffer unsolicited result codes in the TA; if TA result code buffer is full, codes can be

Command	Q2686x and Q2687x	HL6528x
		buffered in some other place or the oldest ones can be discarded. 1 Discard unsolicited result codes when TA TE link is reserved (e.g. in on-line data mode); otherwise forward them directly to the TE **<keyp>** 0 No keypad event reporting **<disp>** 0 No display event reporting **<bfr>** 0 TA buffer of unsolicited result codes defined within this command is cleared when <mode>=1 is entered
Read command **AT+CMER?**	Response **+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>** **OK**	Response **+CMER: <mode>,<keyp>,<disp>,<ind>,<bfr>** **OK**

6.3. +CMEC: Mobile Equipment Control Mode

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CMEC=<keyp>[,<disp>[,<ind>]]**	Response **OK**	Response **OK** Parameters **<keyp>** 0 Keypad management, not significant (no keypad) **<disp>** 0 Display management, not significant (no display)
Read command **AT+CMEC?**	Response **+CMEC: <keyp>,<disp>,<ind>** **OK**	Response **+CMEC: <keyp>,<disp>,<ind>** **OK**

Command	Q2686x and Q2687x	HL6528x
Test command **AT+CMEC=?**	Response **+CMEC: (list of supported <keyp>s),(list of supported <disp>s),(list of supported <ind>s)** **OK**	Response **+CMEC: (list of supported <keyp>s),(list of supported <disp>s),(list of supported <ind>s)** **OK**

6.4. +WTMR and +KTEMPMON: Temperature Monitoring Report

The parameter “mode” on the Q2686x and Q2687x is same as “urcMode” on the HL6528x. For more information, refer to document [1] AirPrime HL6 and HL8 Series AT Commands Interface Guide.

Q2686x and Q2687x		HL6528x	
Action command **AT+WTMR=<mode>**	Response **[+WTMR: <mode>, <state>]** **OK**	Action command **AT+KTEMPMON= <mod>, [<temperature> [,<urcMode> [,<action> [,<hystTime> [,<repGPIO>]]]]]**	Response **+KTEMPMON: <level>,<value>** **OK** Parameters **<mod>** 0 Disable the module’s internal temperature monitor 1 Enable the module’s internal temperature monitor **<temperature>** Temperature limit before the module acts as defined by <action>. Default value: 0 **<urcMode>** 0 Disables the presentation of the temperature monitor URC 1 Enables the presentation of the temperature monitor URC

Q2686x and Q2687x		HL6528x	
			<action> 0 No action 1 Automatic shut-down when the temperature is beyond <temperature> 2 The output pin <repGPIO> is tied HIGH when <temperature> is reached; when the temperature is normal the output pin <repGPIO> is tied LOW. Note that if this parameter is required, it is mandatory to set the <repGPIO> parameter. **<hyst_time>** [0,255] Hysteresis time in seconds. All action will only happen if <temperature> is maintained for at least as long as this period. This parameter is mandatory if <action> is not zero. Default value: 30. **<repGPIO>** 1 – 8 Defines which GPIO is used as output pin. This parameter is mandatory only if <action>=2 is required. Default value: 1.
Read command **AT+WTMR?**	Response **+WTMR: <mode>** **OK**	Read command **AT+KTEMPMON?**	Response **+KTEMPMON:<mod>,<temperature>, <urcMode>,<action>, <hystTime>,<repGPIO>** **OK**
Test command **AT+WTMR=?**	Response **+WTMR: (list of supported <mode>)** **OK**	Test command **AT+KTEMPMON=?**	Response **+KTEMPMON: <mod>,<temperature>, <urcMode>,<action>, <hystTime>,<repGPIO>** **OK**
Unsolicited response	**+WTMR: <state>**	Not available	

7. Serial Port Commands

7.1. +IPR: Fixed DTE Rate

Command	Q2686x and Q2687x	HL6528x
Action command **AT+IPR=<rate>**	Response **OK**	Response **OK** Parameter **<rate>** Bit rate per second 1200, 2400, 4800, 9600, 19200, 38400, 57600,115200 0 = Autobaud
Read command **AT+IPR?**	Response **+IPR: <rate>** **OK**	Response **+IPR: <rate>** **OK**
Test command **AT+IPR=?**	Response **+IPR: (list of auto-detectable <rate>s),(list of supported <rate>s)** **OK**	Response **+IPR: (list of supported auto-detectable <rate>s), (list of supported fixed-only <rate>s)** **OK**

7.2. &S: Set DSR Signal

Command	Q2686x and Q2687x	HL6528x
Action command **AT&S[<n>]**	Response **OK**	Response **OK** Parameter **<n>** 0 or omitted DSR signal always ON (0 is the default value) 1 DSR signal always OFF
Read command **AT&S?**		Not available

7.3. +CMUX: Multiplexing

Q2686x and Q2687x		HL6528x	
Action command **AT+CMUX=<mode>** **[,<subset>** **[,<port_speed>** **[,<N1>[,<T1>[,<N2>** **[,<T2>[,<T3>]]]]]]]**	Response **OK**	Action command **AT+CMUX= <mode>** **[,<subset>** **[,<port_speed>** **[,<N1>[,<T1>** **[,<N2>[,<T2>** **[,<T3>]]]]]]]**	Response **OK** Parameters **<mode>** Multiplexer Transparency Mechanism 0 Basic option **<subset>** 0 UIH frames used only **<port_speed>** Transmission rate 1 9600 bit/s 2 19200 bit/s 3 38400 bit/s 4 57600 bit/s 5 115200 bit/s **<N1>** Maximum frame size (Payload size) (31 - 1540) Default value : 31 **<T1>** Acknowledgement timer in units of ten milliseconds 1 – 254, where 10 is default (100 ms) **<N2>** Maximum number of re-transmissions 0 – 100, where 3 is default **<T2>** Response timer for the multiplexer control channel in units of ten milliseconds 2 – 255, where 30 is default (300 ms)

Q2686x and Q2687x		HL6528x	
			<T3> Wake up response timer in seconds 1 – 255, where 10 is default
Read command **AT+CMUX?**	Response **[+CMUX: <mode>,<subset>, <port_speed>,<N1>, <T1>,<N2>,<T2>,<T3>]** **OK**	Read command **AT+CMUX?**	Response **+CMUX: <mode>,[<subset>], <port_speed>,<N1>, <T1>,<N2>,<T2>,<T3> [,<k>]** **OK**
Test command **AT+CMUX=?**	Response **+CMUX: (list of supported <mode>s), (list of supported <subset>s),(list of supported <port_speed>s),(list of supported <N1>s),(list of supported <T1>s), (list of supported <N2>s),(list of supported <T2>s),(list of supported <T3>s)** **OK**	Test command **AT+CMUX=?**	Response **+CMUX: (list of supported <mode>s), (list of supported <subset>s),(list of supported <port_speed>s), (list of supported <N1>s),(list of supported <T1>s), (list of supported <N2>s),(list of supported <T2>s),(list of supported <T3>s), (list of supported <k>s)** **OK**

8. Security Commands

8.1. +CPIN: Enter PIN

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CPIN=<pin>[,<NewPin>]**	Response **OK**	Response **OK**
Read command **AT+CPIN?**	Response **+CPIN: <code>** No OK in the response.	Response **+CPIN: <code>** **OK** Parameter **<code>** Values reserved by this TS. READY ME is not pending for any password. SIM PIN ME is waiting for SIM PIN to be given. SIM PUK ME is waiting for SIM PUK to be given. A second pin, <newpin>, is used to replace the old pin in the SIM and should thus be supplied. SIM PIN2 ME is waiting SIM PIN2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PIN2 authentication failure (i.e. +CME ERROR: 17); if PIN2 is not entered right after the failure, it is recommended that ME does not block its operation). SIM PUK2 ME is waiting SIM PUK2 to be given (this <code> is recommended to be returned only when the last executed command resulted in PUK2 authentication failure (i.e. +CME ERROR: 18); if PUK2 and new PIN2 are not entered right after the failure, it is recommended that ME does not block its operation). Also, a second pin, <newpin>, is used to replace the old pin in the SIM and should thus be supplied. PH-NET PIN ME is waiting personalization password to be given.

8.2. +CPINC and *PSPRAS: Number of Remaining PIN Attempts

Q2686x and Q2687x		HL6528x	
Action command **AT+CPINC**	Response **+CPINC:<pin1>,<pin2>, <puk1>, <puk2>** **OK**	Action command **AT*PSPRAS**	Response **OK**
Read command **AT+CPINC?**	Response **+CPINC:<pin1>,<pin2>, <puk1>, <puk2>** **OK**	Read command **AT*PSPRAS?**	Response ***PSPRAS:<pin1>, <puk1>,<pin2>,<puk2>** **OK**
Test command **AT+CPINC=?**	Response **OK**	Test command **AT*PSPRAS=?**	Response ***PSPRAS: (list of supported <code>)** **OK** Parameter **<code>** "SIM PIN1", "SIM PUK1", "SIM PIN2", "SIM PUK2"

8.3. +CPWD: Change Password

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CPWD=<fac>,<oldpwd>,<newpwd>**	Response **OK**	Response **OK** Parameter **<fac>** "AO" BAOC (Barr All Outgoing Calls) "OI" BOIC (Barr Outgoing International Calls) "OX" BOIC-exHC (Barr Outgoing International Calls except to Home Country) "AI" BAIC (Barr All Incoming Calls) "IR" BIC-Roam (Barr Incoming Calls when Roaming outside the home country)

Command	Q2686x and Q2687x	HL6528x
		"AB" All Barring services (refer GSM02.30[19]) (applicable only for <mode>=0) "P2" SIM PIN2<oldpwd> password specified for the facility from the user interface or with command. If an old password has not yet been set, <oldpwd> is not to enter. "SC" SIM (lock SIM card) (SIM asks password in ME power-up and when this lock command issued)
Test command **AT+CPWD=?**	Response **+CPWD: list of supported (<fac>,<pwdlength>)s** **OK**	Response **+CPWD: list of supported (<fac>,<pwdlength>)s** **OK**

8.4. +CLCK: Facility Lock

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CLCK=<fac>,<mode> [,<password>[,<class>]]**	Response **[+CLCK: <status>, <class> […]]** **OK**	Response If <mode> <> 2 and command is successful: **OK** If <mode> = 2 and command is successful: **+CLCK:<status>[,<class1> [<CR>,<LF>+CLCK:<status>,class2…]]** **OK** Parameter **<class>** Sum of integers each representing a class of information (default 7) 1 Voice (telephony) 2 Data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128) 8 Short message service

Command	Q2686x and Q2687x	HL6528x
Read command **AT+CLCK?**		Not available
Test command **AT+CLCK=?**	Response **+CLCK: (list of supported <fac>s)** **OK**	Response **+CLCK: (list of supported <fac>s)** **OK**

9. Time Management Commands

9.1. +CCLK: Clock Management

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CCLK=<time>**	Response **OK**	Response **OK** Parameter **<time>** String type value; format is "yy/MM/dd,hh:mm:ss+/-Time zone", where characters indicate year (last two digits), month, day, hour, minutes, Seconds and time zone (indicates the difference, expressed in quarters of an hour, between the local time and GMT; range -96...+96). E.g. 6th of May 1994, 22:10:00 GMT+2 hours equals to "94/05/06,22:10:00+08"
Read command **AT+CCLK?**	Response **+CCLK: <time>** **OK**	Response **+CCLK: <time>** **OK**

9.2. +CALA: Alarm Management

Q2686x and Q2687x		HL6528x	
Action command **AT+CALA=[<time>] [,<index>]**	Response **OK**	Action command **AT+CALA=<time> [,<index>]**	Response **OK** Parameters **<time>** Format "hh:mm:ss" is used if <recurr> is present; format "yy/mm/dd,hh:mm:ss" is used if not. **<index>** Alarm index (range = 1 to 4)

Q2686x and Q2687x		HL6528x	
Read command **AT+CALA?**	Response **+CALA: <time>,<index>** **[+CALA:<time>,<index> […]]** **OK**	Read command **AT+CALA?**	Response **[+CALA: <time>, <index>,[<recurr>] <CR><LF>** **[+CALA: <time>, <index>,[<recurr>] <CR><LF>** **OK**
Unsolicited response	**+CALA: <time>,<index>**	Unsolicited response	**+CALV: <index>**

10. GSM Network Commands

10.1. +CREG: Network Registration

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CREG=<n>**	Response **OK**	Response **OK** Parameter **<n>** 0 Disable network registration unsolicited result code 1 Enable network registration unsolicited result code +CREG: <stat> 2 Enable network registration and location information unsolicited result code +CREG: <stat>[,<lac>,<cid>]
Read command **AT+CREG?**	Response If <stat> does not equal 3 (nominal case): **+CREG: <mode>,<stat>[,<lac>, <cid> [,<AcT>]]** **OK** If <stat> is equals to 3> (specific case): **+CREG: <mode>,<stat> [,<rejectCause>]** **OK**	Response **+CREG: <n>,<stat> [,<lac>,<cid>]** **OK** Parameter **<cid>** String type; two byte cell ID in hexadecimal format
Test command **AT+CREG=?**	Response **+CREG: (list of supported <mode>s)** **OK**	Response **+CREG: (list of supported <n>s)** **OK**
Unsolicited response	If <stat> does not equal 3 (nominal case): **+CREG: <stat>[,<lac>,<cid>]** If <stat> is equals to 3> (specific case): **+CREG: <stat>[,<rejectCause>]**	When <n>=1: **+CREG: <stat>** When <n>=2: **+CREG: <stat>[,<lac>,<cid>]**

11. Call Control Commands

11.1. D: Dial Command for a Specific Number

Q2686x and Q2687x		HL6528x	
Action command **ATD<n>[<I>][<G>][;]**	Response (Depending on GSM sequence): **OK / CONNECT <speed> / NO CARRIER / BUSY / NO ANSWER**	Action command **ATD[<n>][;]**	Response **NO DIALTONE** **OK / CONNECT <speed> / NO CARRIER / BUSY / NO ANSWER / NO DIALTONE** Parameter **<n>** String of dialing digits and optionally V.25ter modifiers (dialing digits): 0-9, * , #, +, A, B, C, D, P, T, W, ,, @, ! (maximum length: 20 digits)

11.2. H: Hang-Up Command

Command	Q2686x and Q2687x	HL6528x
Action command **ATH[<n>]**	Response **OK**	Response **OK** Parameter **<n>** Type of call affected by ATH request. Voice call disconnection is also dependent of +CVHU settings 0 Same behaviors as without parameter. Disconnect ALL calls on the channel the command is requested. All active or waiting calls, CS data calls, GPRS call of the channel will be disconnected 1 Disconnect all calls on ALL connected channels. All active or waiting calls, CSD calls, GPRS call will be disconnected (cleanup of all calls of the ME).

11.3. +CEER: Extended Error Report

<table>
<tr><th>Command</th><th>Q2686x and Q2687x</th><th>HL6528x</th></tr>
<tr><td>Action command
AT+CEER</td><td>Response
+CEER: <report>
OK</td><td>Response
+CEER: <report>
OK

Parameters
<report> String
"Cause Select: <cause_select>
Cause: <cause>"

<table><tr><th><cause_ select></th><th><cause></th></tr><tr><td>0: No cause</td><td>0: No cause</td></tr><tr><td>16: Service provider</td><td>0: Unknown</td></tr><tr><td></td><td>1: Not Allowed</td></tr><tr><td></td><td>2: No cause</td></tr><tr><td></td><td>6: Wrong parameter</td></tr><tr><td></td><td>9: Network access not allowed</td></tr><tr><td></td><td>20: all call instances are used</td></tr><tr><td></td><td>21: ACM over ACM Max</td></tr><tr><td></td><td>22: invalid AOC element</td></tr><tr><td></td><td>23: SIM increase not allowed</td></tr><tr><td></td><td>24: switch off</td></tr><tr><td></td><td>25: Unknown call id</td></tr><tr><td></td><td>28: barred</td></tr><tr><td>65: Local cause</td><td>1: state error</td></tr></table></td></tr>
</table>

Command	Q2686x and Q2687x	HL6528x	
			2: no call entity
			3: wrong TI
			6: DTMF buffer overflow
			7: call disconnected
			17: No cell available
			32: Local rejection
			33: PLMN not allowed
			34: emergency call not possible
			35: authentication rejected
			36: network rejection
			37: LA not allowed
			38: Local timeout
			39: server congestion
			40: local data rejection
			48: failed replace PDP context
		66: MM network cause	See [04.08]
		67: CC network cause	See [04.08]
		69: RP cause	See [04.08]
		71: SIM cause	0: Unknown problem

Command	Q2686x and Q2687x	HL6528x
		1: Memory problem 2: File Id not found 6: Increase problem 7: Technical problem 11: Command not allowed 15: SIM card out 73: SM cause See [04.08]
Test command **AT+CEER=?**	Response **OK**	Response **OK**

11.4. +CSNS: Single Numbering Scheme

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CSNS=<mode>**	Response **OK**	Response **OK** Parameter **<mode>** 0 Voice 4 Data
Read command **AT+CSNS?**	Response **+CSNS: <mode>** **OK**	Response **+CSNS:<mode>** **OK**
Test command **AT+CSNS=?**	Response **+CSNS: (list of supported <mode>s)** **OK**	Response **+CSNS: (list of supported <mode>)** **OK**

12. Data Commands

12.1. +CBST: Bearer Type Selection

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CBST=[<speed>][,[<name>][,<ce>]]**	Response **OK**	Response **OK** Parameters **<speed>** 0 Autobauding (automatic selection of the speed; this setting is possible in case of 3.1 kHz modem and non-transparent service) 7 9600 bps (V.32) 71 9600 bps (V.110 or X.31 flag stuffing) **<ce>** 1 Non-transparent
Read command **AT+CBST?**	Response **+CBST: <speed>,<name>,<ce>** **OK**	Response **+CBST: <speed>,<name>,<ce>** **OK**
Test command **AT+CBST=?**	Response **+CBST: (list of supported <speed>s), (list of supported <name>s),(list of supported <ce>s)** **OK**	Response **+CBST: (list of supported <speed>s), (list of supported <name>s),(list of sup-ported <ce>s)** **OK**

12.2. +CRLP: Radio Link Protocol Parameters

Q2686x and Q2687x		HL6528x	
Action command **AT+CRLP=[<iws>][,[<mws>][,[<T1>][,[<N2>][,[<ver>]]]]]**	Response **OK**	Action command **AT+CRLP=[<iws>][,[<mws>][,[<T1>][,[<N2>][,[<ver> [,<T4>]]]]]]**	Response **OK** Parameters **<ver>** RLP version number in integer format; when version indication is not present it shall equal 0 **<iws>, <mws>, <T1>, <N2>, <T4>** IWF to MS window size, MS to IWF window size, acknowledgement timer T1, retransmission attempts N2, resequencing period T4 in integer format (default values and value ranges depend on RLP version; refer 3G TS 24.022 [18]): T1 and T4 are in units of 10ms.
Read command **AT+CRLP?**	Response **+CRLP: <iws>,<mws>, <T1>,<N2>,<ver>** **OK**	Read command **AT+CRLP?**	Response **+CRLP: <iws>,<mws>, <T1>,<N2> [,<ver1>[,<T4>]]** **[+CRLP: <iws>,<mws>, <T1>,<N2> [,<ver2>[,<T4>]] [...]]** **OK**
Test command **AT+CRLP=?**	Response **+CRLP: (list of supported <iws>s),(list of supported <mws>s), (list of supported <T1>s),(list of supported <N2>s),(list of supported <ver>s)** **OK**	Test command **AT+CRLP=?**	Response **+CRLP: (list of supported <iws>s),(list of supported <mws>s), (list of supported <T1>s),(list of supported <N2>s) [,<ver1>[,(list of supported <T4>s)]]** **[+CRLP: (list of supported <iws>s),(list of supported <mws>s), (list of supported <T1>s),(list of supported <N2>s) [,<ver1>[,(list of supported <T4>s)]][...]]** **OK**

12.3. +FCLASS and #CLS: Select Mode

Q2686x and Q2687x		HL6528x	
Action command **AT+FCLASS=<class>**	Response **OK**	Action command **AT#CLS=<class>**	Response **OK** Parameters **<class>** 0 Data mode
Read command **AT+FCLASS?**	Response **+FCLASS: <class>** **OK**	Read command **AT#CLS?**	Response **#CLS <class>** **OK**
Test command **AT+FCLASS=?**	Response **+FCLASS: (list of supported <class>s)** **OK**	Test command **AT#CLS=?**	Response **#CLS: (list of currently available <class>s)** **OK**

12.4. \N: Select Data Error Correcting Mode

Command	Q2686x and Q2687x	HL6528x
Action command **AT\N[<n>]**	Response **OK**	Response **OK** Parameter **<n>** 0 Transparent mode 4, 6 RLP mode (non-transparent)
Read command **AT\N?**		Not available

13. GPRS Commands

13.1. +CGCLASS: GPRS Mobile Station Class

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CGCLASS=<class>**	Response **OK**	Response **OK** Parameter **<class>** A string parameter which indicates the GPRS mobile class (in descending order of functionality) "B" Class B "CC" Class C in circuit switched only mode (lowest)
Read command **AT+CGCLASS?**	Response **+CGCLASS: <class>** **OK**	Response **+CGCLASS: <class>** **OK**
Test command **AT+CGCLASS=?**	Response **+CGCLASS: (list of supported <class>s)** **OK**	Response **+CGCLASS: (list of supported <class>es)** **OK**

13.2. +CGDCONT: Define PDP Context

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CGDCONT=<cid> , <PDP_type> [,<APN> [,<PDP_addr> [,<d_comp> [,<h_comp>]]]]**	Response **OK**	Response **OK** Parameters **<cid>** 1 – 2 (PDP Context Identifier) a numeric parameter which specifies a particular PDP context definition. **<PDP_type>** Packet Data Protocol type. A string parameter which specifies the type of packet data protocol. Only IP Internet

Command	Q2686x and Q2687x	HL6528x
		Protocol - IETF STD 5) is supported. **<d_comp>** a numeric parameter that controls PDP data compression. 0 Off (default and only value supported) **<h_comp>** a numeric parameter that controls PDP header compression 0 Off (default and only value supported) **<pd1>, … <pdN>** zero to N string parameters whose meanings are specific to <PDP_type>
Read command **AT+CGDCONT?**	Response **+CGDCONT:<cid>,<PDP_type>, <APN>,<PDP_addr>,<d_comp>, <h_comp>** **[+CGDCONT:<cid>,<PDP_type>, <APN>,<PDP_addr>,<d_comp>, <h_comp>** **[…]]** **OK**	Response **+CGDCONT: <cid>, <PDP_type>, <APN>, <PDP_addr>,<data_comp>, <head_comp>[,<pd1>[,…[,pdN]]** **OK**
Test command **AT+CGDCONT=?**	Response **+CGDCONT: (list of supported <cid>s),<PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s)** **[+CGDCONT: (list of supported <cid>s),<PDP_type>,,,(list of supported <d_comp>s),(list of supported <h_comp>s)[…]]** **OK**	Response **+CGDCONT: (range of supported <cid>s), <PDP_type>,,,(list of supported <d_comp>s), (list of supported <h_comp>s)[,(list of supported <pd1>s)[,…[,(list of supported <pdN>s)]]][...]]** **OK**

13.3. +CGATT: GPRS Attach or Detach

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CGATT=<state>**	Response **OK**	Response **OK**

Command	Q2686x and Q2687x	HL6528x
		Parameter **<state>** Indicates the state of PS attachment 0 Detached 1 Attached
Read command **AT+CGATT?**	Response **+CGATT: <state>** **OK**	Response **+CGATT: <state>** **OK**
Test command **AT+CGATT=?**	Response **+CGATT: (list of supported <state>s)** **OK**	Response **+CGATT: (list of supported <state>s)** **OK**

13.4. +CGDATA: Enter Data State

Q2686x and Q2687x		HL6528x	
Action command **AT+CGDATA[=<cid>]**	Response **CONNECT**	Action command **AT+CGDATA = [<L2P> [,<cid> [,<cid> [,...]]]]**	Response **CONNECT** (and then data transfer) or **CME ERROR: <error>** Parameter **<L2P>** String parameter that indicates the layer 2 protocol to be used between the TE and MT PPP Point-to-point protocol for a PDP such as IP M-OPT-PPP MS supports manufacturing specific protocol M-HEX MS supports manufacturing specific protocol M-RAW_IP MS supports manufacturing specific protocol

Q2686x and Q2687x		HL6528x	
			<cid> Numeric parameter which specifies a particular PDP context definition (see +CGDCONT and +CGDSCONT commands)
Test command **AT+CGDATA=?**	Response **+CGDATA:** **OK**	Test command **AT+CGDATA=?**	Response **+CGDATA: (list of supported <L2P>s)** **OK**

13.5. +CGQMIN: Quality of Service Profile (Minimum Acceptable)

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CGQMIN=<cid>** **[,<precedence> [,<delay>** **[,<reliability>** **[,<peak>[,<mean>]]]]]**	Response **OK**	Response **OK** Parameters **<delay>** numeric parameter for the delay class **<reliability>** numeric parameter for the reliability class 0 Network subscribed value 1 Non real-time traffic , error-sensitive application that cannot cope with data loss 2 Non real-time traffic, error-sensitive application that can cope with infrequent data loss 3 Non real-time traffic, error-sensitive application that can cope with data loss, GMM/SM, and SMS 4 Real-time traffic, error-sensitive application that can cope with data loss 5 Real-time traffic, error non-sensitive application that can cope with data loss

Command	Q2686x and Q2687x	HL6528x
		<peak> numeric parameter for the peak throughput class 0 Network subscribed value 1 Up to 1 000 (8 kbit/s) 2 Up to 2 000 (16 kbit/s) 3 Up to 4 000 (32 kbit/s) 4 Up to 8 000 (64 kbit/s) 5 Up to 16 000 (128 kbit/s) 6 Up to 32 000 (256 kbit/s) 7 Up to 64 000 (512 kbit/s) 8 Up to 128 000 (1 024 kbit/s) 9 Up to 256 000 (2 048 kbit/s) **<mean>** Numeric parameter for the mean throughput class 0 Network subscribed value 1 100 (~0.22 bit/s) 2 200 (~0.44 bit/s) 3 500 (~1.11 bit/s) 4 1 000 (~2.2 bit/s) 5 2 000 (~4.4 bit/s) 6 5 000 (~11.1 bit/s) 7 10 000 (~22 bit/s) 8 20 000 (~44 bit/s) 9 50 000 (~111 bit/s) 10 100 000 (~0.22 kbit/s) 11 200 000 (~0.44 kbit/s) 12 500 000 (~1.11 kbit/s) 13 1 000 000 (~2.2 kbit/s) 14 2 000 000 (~4.4 kbit/s) 15 5 000 000 (~11.1 kbit/s) 16 10 000 000 (~22 kbit/s) 17 20 000 000 (~44 kbit/s) 18 50 000 000 (~111 kbit/s) 31 Best effort

Command	Q2686x and Q2687x	HL6528x
Read command **AT+CGQMIN?**	Response **+CGQMIN: <cid>,<precedence>,<delay>, <reliability>,<peak>,<mean>** **[+CGQMIN: <cid>,<precedence>,<delay>, <reliability>,<peak>,<mean> […]]** **OK**	Response **+CGQMIN: <cid>,<precedence>,<delay>,<reliability>, <peak>,<mean>** **[+CGQMIN: ...]** **OK**
Test command **AT+CGQMIN=?**	Response **+CGQMIN: <PDP_type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s)** **[+CGQMIN: <PDP_type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported <reliability>s),(list of supported peak>s),(list of supported <mean>s)[…]]** **OK**	Response **+CGQMIN: <PDP_type>,(list of supported <precedence>s), (list of supported <delay>s),(list of supported <reliability>s), (list of supported <peak>s),(list of supported <mean>s)** **[+CGQMIN:...]** **OK**

13.6. +CGQREQ: Quality of Service Profile

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CGQREQ=[<cid> [,<precedence> [,<delay> [,<reliability> [,<peak> [,<mean>]]]]]]**	Response **OK**	Response **OK** Parameters **<cid>** Numeric parameter which specifies a particular PDP context definition (see the +CGDCONT command). **<delay>** Numeric parameter which specifies the delay class **<reliability>** Numeric parameter which specifies the reliability class **<peak>** Numeric parameter which specifies the peak throughput class

Command	Q2686x and Q2687x	HL6528x
		<mean> Numeric parameter which specifies the mean throughput class
Read command **AT+CGQREQ?**	Response **+CGQREQ: <cid>,<precedence>,<delay>, <reliability>,<peak>,<mean>** **[+CGQREQ: <cid>,<precedence>,<delay>, <reliability>,<peak>,<mean>[…]]** **OK**	Response **+CGQREQ: <cid>,<precedence>,<delay>, <reliability>, <peak>,<mean>** **[+CGQREQ: <cid>,<precedence>,<delay>, <reliability.>, <peak>,<mean>** **[…]]** **OK**
Test command **AT+CGQREQ=?**	Response **+CGQREQ: <PDP_type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s)** **[+CGQREQ: <PDP_type>,(list of supported <precedence>s),(list of supported <delay>s),(list of supported reliability>s),(list of supported peak>s),(list of supported <mean>s)[…]]** **OK**	Response **+CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s)** **[+CGQREQ: <PDP_type>, (list of supported <precedence>s), (list of supported <delay>s),(list of supported <reliability>s),(list of supported <peak>s),(list of supported <mean>s) […]]** **OK**

13.7. +CGEREP: GPRS Event Reporting

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CGEREP=<mode> [,<bfr>]**	Response **OK**	Response **OK** Parameters **<mode>** 0 Buffer unsolicited result codes in the MT; if MT result code buffer is full, the oldest ones can be discarded. No codes are forwarded to the TE. 2 Buffer unsolicited result codes in the MT when MT-TE link is reserved (e.g. in on-line data mode) and flush them to the TE when MT-TE link becomes available; otherwise forward them directly to the TE

Command	Q2686x and Q2687x	HL6528x
		<bfr> 0 MT buffer of unsolicited result codes defined within this command is cleared when <mode> 1 or 2 is entered
Read command **AT+CGEREP?**	Response **+CGEREP: <mode>,<bfr>** **OK**	Response **+CGEREP: <mode>, <bfr>** **OK**
Test command **AT+CGEREP=?**	Response **+CGEREP: (list of supported <mode>s),(list of supported <bfr>s)** **OK**	Response **+CGEREP: (list of supported <mode>s),(list of supported <bfr>s)** **OK**
Unsolicited response	If <event>=ME REJECT: **+CGEV: <event> <PDP_type>, <PDP_addr>** If <event>= NW REACT or NW DEACT or ME DEACT: **+CGEV: <event> <PDP_type>, <PDP_addr>[,<cid>]** If <event>=NW DETACH or ME DETACH: **+CGEV: <event>** If <event>= NW CLASS or ME CLASS: **+CGEV: <event> <class>**	**+CGEV: NW DEACT <PDP_type>, <PDP_addr>, [<cid>]** **+CGEV: ME DEACT <PDP_type>, <PDP_addr>, [<cid>]** **+CGEV: ME DETACH** **+CGEV: NW DETACH**

13.8. +WTBI and +WMTXPOWER: GSM/GPRS TX Burst Indication

Q2686x and Q2687x		HL6528x	
Action command **AT+WTBI=<mode>**	Response **OK**	Action command **AT+WMTXPOWER= <mode>**	Response **OK**

Q2686x and Q2687x		HL6528x	
Read command **AT+WTBI?**	Response **+WTBI:<mode>** **OK**	Read command **AT+WMTXPOWER?**	Response **+WMTXPOWER=<ENABLE>[,<BAND>,<CHANNEL>,<POWER_LEVEL>,<MULTISLOT>]** **OK** Note that parameters [,<BAND>, <CHANNEL>, <POWER_LEVEL> and <MULTISLOT>] are only available if <ENABLE>=1.
Test command **AT+WTBI=?**	Response **+WTBI: (list of supported <mode>s)** **OK**	Test command **AT+WMTXPOWER=?**	Response **+ WMTXPOWER=(list of supported <BAND>s), (list of supported <CHANNEL>s ranges), (supported <MULTISLOT> values)** **OK**

13.9. +WPPP: Authentication Protocol

Command	Q2686x and Q2687x	HL6528x
Action command **AT+WPPP=<auth>,[<cid>],[<username],[<password>]**	Response **OK**	Response **OK** or **+CME ERROR <err>** Parameters **<Auth>** Type of authentication supported 1 PAP (default) **<cid>** PDP context identifier used in +CGDCONT. If omitted, the configuration is set for all PDP contexts. Range: 1 – 2 **<username>** Login for the APN. String type, up to 30 characters

Command	Q2686x and Q2687x	HL6528x
		<password> Password for the APN. String type, up to 30 characters
Read command **AT+WPPP?**	Response **+WPPP: <auth>,[<cid>],[<username>],[<password>]** **OK**	Response **+WPPP: <Auth>,[<cid>],[<username>],[<password>]** **OK**
Test command **AT+WPPP=?**	Response **+WPPP: <list of supported <auth>s>,[<list of supported <cid>s>]** **OK**	Response **+WPPP: (list of supported <Auth>s),[(list of supported <cid>s)]** **OK**

14. PLMN Commands

14.1. +COPS: Operator Selection

Q2686x and Q2687x		HL6528x	
Action command **AT+COPS=<mode>[,<format>[,<oper>[,<AcT>]]]**	Response **OK**	Action command **AT+COPS=<mode>[,<format>[,<oper>]]**	Response **OK** Parameters **<mode>** 0 Automatic (<oper> field is ignored) 1 Manual (<oper> field shall be present) 3 Set the read format; use with <format> 4 Manual/automatic (<oper> field shall be present); if manual selection fails, automatic mode (<mode>=0) is entered **<oper>** string type; <format> indicates if the format is alphanumeric or numeric.
Read command **AT+COPS?**	Response **+COPS: <mode>[,<format>,<oper>[,<AcT>]]** **OK**	Read command **AT+COPS?**	Response **+COPS: <mode>[,<format>,<oper>]** **OK**
Test command **AT+COPS=?**	Response **+COPS: [list of supported (<stat>,long alphanumeric <oper>, short alphanumeric <oper>,numeric <oper>[,<AcT>])s]** **OK**	Test command **AT+COPS=?**	Response **+COPS: [list of supported (<stat>,long alphanumeric <oper>, short alphanumeric <oper>, numeric <oper>)s][,,(list of supported <mode>s), (list of supported <format>s)]** **OK**

15. Phonebook Commands

15.1. +CPBS: Select Phonebook Memory Storage

Q2686x and Q2687x		HL6528x	
Action command **AT+CPBS=<storage> [,<pin2>]**	Response **OK**	Action command **AT+CPBS=<storage>**	Response **OK** Parameter **<storage>** "DC" ME dialed calls list (+CPBW may not be applicable for this storage) $(AT R97)$ "EN" SIM/USIM (or MT) emergency number (+CPBW is not be applicable for this storage) "FD" SIM fix dialing-phonebook "MC" MT missed (unanswered received) calls list (+CPBW may not be applicable for this storage) "ON" SIM (or ME) own numbers (MSISDNs) list (reading of this storage may be available through +CNUM also) $(AT R97)$ "RC" MT received calls list (+CPBW may not be applicable for this storage) "SM" SIM phonebook
Read command **AT+CPBS?**	Response **+CPBS: <storage>, <used>,<total>** **OK**	Read command **AT+CPBS?**	Response **+CPBS: <storage> [,<used>,<total>]** **OK**
Test command **AT+CPBS=?**	Response **+CPBS: (list of supported <storage>s)** **OK**	Test command **AT+CPBS=?**	Response **+CPBS: (list of supported <storage>s)** **OK**

15.2. +CPBW: Write Phonebook Entry

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CPBW=[<index>] [,<number>[,<type> [,<text>]]]**	Response **OK**	Response **OK** Parameter **<type>** Type of address octet in integer format (refer GSM 04.08 [8] sub clause 10.5.4.7); default 145 when dialing string includes international access code character "+", otherwise 129
Test command **AT+CPBW=?**	Response **+CPBW: (list of supported <index>s),[<nlength>],(list of supported <type>s),[<tlength>]** **OK**	Response **+CPBW: (list of supported <index>s),[<nlength>], (list of supported <type>s),[<tlength>]** **OK**

15.3. +CPBR: Read Phonebook Entries

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CPBR=<first_entry> [,<last_entry>]**	Response **+CPBR: <loc>,<num>,<type>,<name> [+CPBR:<loc>,<num>,<type>,<name>[…]]** **OK**	Response **[+CPBR: <loc>,<num>,<type>,<name>] [+CPBR: <loc>,<num>,<type>,<name>]** **OK** Parameter **<type>** Type of address octet in integer format (refer GSM 04.08 [8] sub clause 10.5.4.7)
Test command **AT+CPBR=?**	Response **+CPBR: (list of supported <loc>s),<nlength>,<tlength>** **OK**	Response **+CPBR: (list of supported <loc>s),[<nlength>],[<tlength>]** **OK**

15.4. +CPBF: Find Phonebook Entries

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CPBF=<string>**	Response **+CPBF: <loc>,<num>,<type>,<name>** **OK**	Response **[+CPBF: <loc>,<num>,<type>,<name>]** **[+CBPF: <loc>,<num>,<type>,<name>]** **OK** Parameter **<type>** Type of address octet in integer format (refer to GSM 04.08 [8] sub clause 10.5.4.7)
Test command **AT+CPBF=?**	Response **+CPBF: [<nlength>],[<tlength>], [<glength>],[<slength>], [<elength>]** **OK**	Response **+CPBF: [<nlength>],[<tlength>]** **OK**

15.5. +CNUM: Subscriber Number

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CNUM**	Response **+CNUM: <alpha1>,<number1>,<type1>** **[+CNUM: <alpha2>,<number2>,<type2>[…]]** **OK**	Response **+CNUM: [<alpha1>],<number1>,<type1>[,<speed>,<service>[,<itc>]]** **[<CR><LF>** **+CNUM: [<alpha2>],<number2>,<type2>[,<speed>,<service>[,<itc>]][...]]** **OK** Parameter **<type>** Type of address octet in integer format (refer GSM 04.08 [8] sub clause 10.5.4.7)
Test command **AT+CNUM=?**	Response **OK**	Response **OK**

16. Short Message Commands

16.1. +CNMI: New Message Indication

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CNMI=<mode>,<mt>,<bm>, <ds>,<bfr>**	Response **OK**	Response **OK** Parameter **<mode>** 2 Buffer unsolicited result codes in the TA when TA-TE link is reserved (e.g. in on-line data mode) and flush them to the TE after Reservation. Otherwise forward them directly to the TE.
Read command **AT+CNMI?**	Response **+CNMI:<mode>,<mt>,<bm>, <ds>,<bfr>** **OK**	Response **+CNMI: <mode>,<mt>,<bm>, <ds>,<bfr>** **OK**
Test command **AT+CNMI=?**	Response **+CNMI: (list of supported <mode>s),(list of supported <mt>s),(list of supported <bm>s),(list of supported <ds>s),(list of supported <bfr>s)** **OK**	Response **+CNMI: (list of supported <mode>s), (list of supported <mt>s), (list of supported <bm>s), (list of supported <ds>s), (list of supported <bfr>s)** **OK**

16.2. +CPMS: Preferred Message Storage

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CPMS=<mem1> [,<mem2>,[<mem3>]]**	Response **+CPMS: <used1>,<total1>,<used2>, <total2> ,<used3>,<total3>** **OK**	Response **+CPMS: <used1>,<total1>,<used2>, <total2>, <used3>,<total3>** **OK** Parameter **<Mem1>** "SM" SMS message storage in SIM (default value)

Command	Q2686x and Q2687x	HL6528x
		"ME" SMS message storage in Flash
Read command **AT+CPMS?**	Response **+CPMS: <used1>,<total1>,<used2>, <total2>, <used3>,<total3>** **OK**	Response **+CPMS: <mem1>,<used1>,<total1>, <mem2>,<used2>,<total2>, <mem3>,<used3>,<total3>** **OK**
Test command **AT+CPMS=?**	Response **+CPMS: (list of supported <mem1>s,list of supported <mem2>s,list of supported <mem3>s)** **OK**	Response **+CPMS: (list of supported <mem1>s), (list of supported <mem2>s), (list of supported <mem3>s)** **OK**

16.3. +CSAS: Save Settings

Some extra settings are saved in the Q2686x or Q2687x's non-volatile memory. For more information, refer to the documents enumerated in section 2.2 References for AirPrime Q2686x and Q2687x.

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CSAS**	Response **OK**	Response **OK**

16.4. +CRES: Restore Settings

Some extra settings are saved in the Q2686x or Q2687x's non-volatile memory. For more information, refer to the documents enumerated in section 2.2 References for AirPrime Q2686x and Q2687x.

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CRES**	Response **OK**	Response **OK**

16.5. +CBST: Select Cell Broadcast Message Types

Q2686x and Q2687x		HL6528x	
Action command **AT+CSCB=<mode>[,[<mids>,[,<dcs>]]]**	Response **OK**	Action command **AT+CSCB=[<mode>[,<mids>]]**	Response **OK** Parameters **<mode>** 0 Accepts messages that are defined in <mids> 1 Does not accept messages that are defined in <mids> **<mids>** String type; combinations of CBM message IDs (e.g. "0,1,5,320-478,922"). The number of ranges in <mids> parameter string is limited to 6. Note that intervals are not allowed.

17. SIM Commands

17.1. +CRSM: Restricted SIM Access

Q2686x and Q2687x		HL6528x	
Action command **AT+CRSM=<command>[,<fileid>[,<P1>,<P2>,<P3>[,<data>[,<pathid>]]]]**	Response **+CRSM: <sw1>,<sw2>[,<response>]** **OK**	Action command **AT+CRSM=<command>[,<fileid>[,<P1>,<P2>,<P3>[,<data>]]]**	Response **+CRSM: <sw1>,<sw2>[,<response>]** **OK**
Read command **AT+CRSM?**		Not available	
Test command **AT+CRSM=?**	Response **OK**	Test command **AT+CRSM=?**	Response **OK**

18. SIM ToolKit Commands

The SIM toolkit features in the Q2686x and Q2687x differ from that of the HL6528x.

In the HL6528x, only two commands are used for the complete functionality of the STK which are *PSSTKI and *PSSTK. The *PSSTKI command is used to enable and disable the STK indications whereas the *PSSTK command is used to get responses from the SIM for any STK unsolicited indications. For detailed information regarding these two commands, refer to document [1] AirPrime HL6 and HL8 Series AT Commands Interface Guide.

The Q2686x and Q2687x, on the other hand, have several other commands to perform STK tasks. For the complete list of these other commands, refer to the Q2686x and Q2687x AT commands guides listed in section 2.2 References for AirPrime Q2686x and Q2687x.

18.1. *PSSTKI: SIM Toolkit Interface Configuration

HL6528x	
Action command **AT*PSSTKI=<mode>**	Response **OK** Parameter **<mode>** 0 No *PSSTK unsolicited result code will be sent to TE. TE won't send *PSSTK command to Module. This mode is useful for basic stk and certification process. 1 Manual mode. Any *PSSTK unsolicited result code will be sent to TE. TE has to acknowledge to *PSSTK notification. 2 Auto acknowledge mode. Module answers to STK without TE, any *PSSTK unsolicited result code will be sent to TE 3 Auto acknowledge mode without sending unsolicited result code to TE Example URC: ***PSSTK: "SETUP MENU",1,4,"SIMOP",0,0,1,0,0,6** TE answers: **AT*PSSTK="SETUP MENU",1,0**
Read command **AT*PSSTKI?**	Response ***PSSTKI:<mode>** **OK**
Test command **AT*PSSTKI=?**	Response ***PSSTKI: (list of supported <mode>s)** **OK**

18.2. *PSSTK: SIM Toolkit

HL6528x	
Action command **AT*PSSTK= <msg>, <parameter1>,…, <parameterN>**	Response **OK** Parameters **<msg>** 1 Command requires a SIM Toolkit answer: "MENU SELECTION" "GET ITEM LIST" 2 Command does not require a SIM Toolkit answer: "ALL CALLS DISCONNECTED" "USER ACTIVITY" "IDLE SCREEN AVAILABLE" "SETUP CALL TERMINATED" 3 Command used to answer an unsolicited result code: "COMMAND REJECTED" "NOTIFICATION" "SETUP CALL" "DISPLAY TEXT" "GET INKEY" "GET INPUT" "PLAY TONE" "SELECT ITEM" "SETUP MENU" "REMOVE MENU" "SETUP IDLE MODE TEXT" **<parameter i>** Depending on the value of <msg>, a parameter list is defined for each value of <msg>.
Unsolicited notification	Response ***PSSTK: <msg>,<parameter1>, …, <parameterN>** **OK**

19. Supplementary Services Commands

19.1. +CLCC: List Current Calls

Q2686x and Q2687x		HL6528x	
Action command **AT+CLCC**	Response **[+CLCC: <id>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]]][…]** **OK**	Action command **AT+CLCC**	Response **[+CLCC: <id1>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]]]** **[+CLCC: <id2>,<dir>,<stat>,<mode>,<mpty>[,<number>,<type>[,<alpha>]]]** **[…]** **OK** Parameters **<id>** Integer type; call identification number as described in GSM 02.30 [19] sub clause 4.5.5.1; this number can be used in +CHLD command operations **<mode>** Bearer or tele-service 0 Voice 1 Data 9 Unknown **<type>** Type of address octet in integer format (refer GSM 04.08 [8] sub clause 10.5.4.7)
Read command **AT+CLCC?**		Not available	
Test command **AT+CLCC=?**	Response **OK**	Test command **AT+CLCC=?**	Response **OK**

19.2. +CHLD: Call Related Supplementary Services

Q2686x and Q2687x		HL6528x	
Action command **AT+CHLD=<n>**	Response **OK**	Action command **AT+CHLD=<n>**	Response **OK**
Read command **AT+CHLD?**		Not available	
Test command **AT+CHLD=?**	Response **+CHLD: (list of supported <n>s)** **OK**	Test command **AT+CHLD=?**	Response **+CHLD: (list of supported <n>s)** **OK**

19.3. +CLIP: Calling Line Identification Presentation

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CLIP=<n>**	Response **OK**	Response **OK**
Read command **AT+CLIP?**	Response **+CLIP: <n>,<m>** **OK**	Response **+CLIP: <n>,<m>** **OK**
Test command **AT+CLIP=?**	Response **+CLIP: (list of supported <n>s)** **OK**	Response **+CLIP: (list of supported <n>)** **OK**
Unsolicited response	**+CLIP: <number>,<type>[,<subaddr>,<satype>[,[<alpha>][,<CLI validity>]]]**	**+CLIP: <number>,<type>[,<subaddr>,<satype[,<alpha>,[<CLI validity>]]]** Parameters **<subaddr>** String type subaddress of format specified by <satype> **<satype>** Type of subaddress octet in integer format (refer GSM 04.08 [8] sub clause 10.5.4.8) **<alpha>** Optional string type alphanumeric representation of <number> corresponding to the entry found in phonebook; used character set should be the one selected with command Select TE

Command	Q2686x and Q2687x	HL6528x
		Character Set +CSCS. NOT SUPPORTED. **<CLI validity>** 0 CLI valid 1 CLI has been withheld by the originator 2 CLI is not available due to interworking problems or limitations of originating network

19.4. +CSSN: Supplementary Service Notifications

Q2686x and Q2687x		HL6528x	
Action command **AT+CSSN=<n>,<m>**	Response **OK**	Action command **AT+CSSN=<n>,<m>**	Response **OK**
Read command **AT+CSSN?**	Response **+CSSN: <n>,<m>** **OK**	Read command **AT+CSSN?**	Response **+CSSN: <n>,<m>** **OK**
Test command **AT+CSSN=?**	Response **+CSSN: (list of supported <n>s),(list of supported <m>s)** **OK**	Test command **AT+CSSN=?**	Response **+CSSN: (list of supported <n>s), (list of supported <m>s)** **OK**
Intermediate response	**+CSSI: <code1>[,<index>]**	Not available	
Unsolicited response	**+CSSU: <code2> [,<index>[,<number>, <type>]]**	Not available	

19.5. +CCFC: Call Forwarding

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CCFC=<reason>, <mode>[,<number> [,<type>,<class> [,<subaddr>[,<satype> [,<time>]]]]]]**	Response **[+CCFC: <status>,<class>[,<number>, <type>[,<subaddr>,<satype> [,<time>]]][…]]** **OK**	Response **+CCFC: <status>,<class1>[,<number>, <type>[,<subaddr>,<satype> [,<time>]]]** **[+CCFC: <status>,<class2> [,<number>,<type> [,<subaddr>, <satype>[,<time>]]]]** **[…]** **OK** Parameters **<type>** Type of address octet in integer format **<class>** Sum of integers each representing a class of information (default value = 7) 1 Voice 2 Data **<subaddr>** String type sub address of format specified by <satype> **<satype>** Type of subaddress octet in integer format
Test command **AT+CCFC=?**	Response **+CCFC: (list of supported <reason>s)** **OK**	Response **+CCFC: (list of supported <reason>s)** **OK**

19.6. +CCWA: Call Waiting

Command	Q2686x and Q2687x	HL6528x
Action command **AT+CCWA=<n>,[<mode>[,<class>]]**	Response **[+CCWA:<status>,<class>[…]]** **OK**	Response **+CCWA: <status>,<class1>** **[+CCWA: <status>,<class2>[...]]** **OK** Parameter **<class>** Sum of integers each representing a class of information (default value = 7) 1 Voice (telephony) 2 Data (refers to all bearer services; with <mode>=2 this may refer only to some bearer service if TA does not support values 16, 32, 64 and 128)
Read command **AT+CCWA?**	Response **+CCWA: <n>** **OK**	Response **+CCWA: <n>** **OK**
Test command **AT+CCWA=?**	Response **+CCWA: (list of supported <n>s)** **OK**	Response **+CCWA: (list of supported <n>s)** **OK**
Unsolicited response	**+CCWA: <number>,<type>[,<class>][,<alpha>]**	**+CCWA: <number>,<type>,<class>** **[,<alpha>]** Parameter **<type>** Type of address octet in integer format (refer TS 24.008 [8] sub clause 10.5.4.7)

20. Audio Commands

20.1. +SIDET and +KST: Side Tone Modification

Q2686x and Q2687x		HL6528x	
Action command **AT+SIDET=<val1>[,<val2>]**	Response **OK**	Action command **AT+KST=<val1>**	Response **OK** Parameter **<val1>** 0 – 16 Side tone value (side tone gain from -26dB to 6dB by steps of 2) 20 Disable side tone
Read command **AT+SIDET?**	Response **+SIDET: <val1>,<val2>** **OK**	Read command **AT+KST?**	Response **+KST: <val1>** **OK**
Test command **AT+SIDET=?**	Response **+SIDET: (list of supported <val1>s),(list of supported <val2>s)** **OK**	Test command **AT+KST=?**	Response **+KST: (list of supported <val1>s)** **OK**

20.2. +VGR: Gain Control

Command	Q2686x and Q2687x	HL6528x
Action command **AT+VGR=<n>**	Response **OK**	Response **OK** Parameters **<n>** < 128 (128 - n) dB less than nominal gain (until -20 dB) 128 Nominal gain > 128 (n-128) dB more than nominal gain (up to 18 dB)

Command	Q2686x and Q2687x	HL6528x
Read command **AT+VGR?**	Response **+VGR: <n>** **OK**	Response **+VGR:<n>** **OK**
Test command **AT+VGR=?**	Response **+VGR: (list of supported <n>s)** **OK**	Response **(list of supported <n>s)** **OK**

20.3. +VGT: Gain Control

Command	Q2686x and Q2687x	HL6528x
Action command **AT+VGT=<n>**	Response **OK**	Response **OK** Parameter **<n>** < 128 (128 - n) dB less than nominal gain (until -20 dB) 128 Nominal gain > 128 (n-128) dB more than nominal gain (until 18 dB)
Read command **AT+VGT?**	Response **+VGT: <n>** **OK**	Response **+VGT:<n>** **OK**
Test command **AT+VGT=?**	Response **+VGT: (list of supported <n>s)** **OK**	Response **(list of supported <n>s)** **OK**

20.4. +WDGR and +KVGR: Digital Gain Control

Q2686x and Q2687x		HL6528x	
Action command **AT+WDGR=<Configuration>,<Rgain>**	Response **OK**	Action command **AT+KVGR=<Rgain>**	Response **OK** Parameters **"<Rgain>"** Digital gain of the downlink path. Range: -20 to 18 in dB
Read command **AT+WDGR?**	Response **+WDGR: <Configuration>, <Rgain>** **[+WDGR: <Configuration>, <Rgain>[…]]** **OK**	Read command **AT+KVGR?**	Response **+KVGR:<Rgain>** **OK**
Test command **AT+WDGR=?**	Response **+WDGR: <Configuration>, (list of supported <Rgain>s)** **[+WDGR: <Configuration>, (list of supported <Rgain>s)]** **OK**	Test command **AT+KVGR=?**	Response **(list of supported <Rgain>s)** **OK**

20.5. +WDGT and +KVGT: Digital Gain Control

Q2686x and Q2687x		HL6528x	
Action command **AT+WDGT= <Configuration>, <Tgain>**	Response **OK**	Action command **AT+KVGT=<Tgain>**	Response **OK** Parameter **"<Tgain>"** Digital gain of the uplink path. Range: -20 to 18 in dB

Q2686x and Q2687x		HL6528x	
Read command **AT+WDGT?**	Response **+WDGT: <Configuration>, <Tgain>** **[+WDGT: <Configuration>, <Tgain>[…]]** **OK**	Read command **AT+KVGT?**	Response **+KVGT:<Tgain>** **OK**
Test command **AT+WDGT=?**	Response **+WDGT: (list of supported <Configuration>s), (list of supported <Tgain>s)** **OK**	Test command **AT+KVGT=?**	Response **(list of supported <Tgain>s)** **OK**

20.6. +ECHO/+KECHO: Echo Cancellation

Q2686x and Q2687x		HL6528x	
Action command **AT+ECHO=<mode>, <algoId>[,<param_1>, …,<param_n>]**	Response **OK**	Action command **AT+KECHO=<mode>**	Response **OK** Parameter **<mode>** 0 Deactivate echo cancellation 1 Echo cancellation
Read command **AT+ECHO?**	Response **+ECHO: <mode>,<algoId>, <param_1>,…, <param_n>** **[+ECHO: <mode>,<algoId>, <param_1>,…, <param_n>]** **OK** For <algoId>=6: **+ECHO: <status>,<algoId>, <blockId1>, <param_1_1>,…, <param_1_n>** **…**	Read command **AT+KECHO?**	Response **+KECHO: <mode>** **OK**

Q2686x and Q2687x		HL6528x	
	+ECHO: <status>,<algoId>, <blockIdm>, <param_m_1>,…, <param_m_n> **OK**		
Test command **AT+ECHO=?**	Response **+ECHO: (list of supported <mode>s), <algoId>, (list of supported <param>s)** **[+ECHO: (list of supported <mode>s), <algoId>, (list of supported <param>s) […]]** **OK** For <algoId>=6: **+ECHO: (list of supported <mode>s),<algoId>,<blockId1>,(list of supported <param>s)** **…** **+ECHO: (list of supported <mode>s),<algoId>,<blockIdm>,(list of supported <param>s)** **OK**	Test command **AT+KECHO=?**	Response **+KECHO: (list of supported <status>es)** **OK**

20.7. +CRMP: Ring Melody Playback

Q2686x and Q2687x		HL6528x	
Action command **AT+CRMP=<call type> [,[<volume>][,[<type>] [,<index>]]]**	Response **OK**	Action command **AT+CRMP=<call type> [,[<volume>][,[<type>] [,<index>]]]**	Response **OK** Parameters **<index>** Integer which defines a ring melody (1-10) **<volume>** Integer which defines the sound level (1-3). The smaller

Q2686x and Q2687x		HL6528x	
			the value, the lower the volume **<call type>** Integer which specifies the type of event which will start the ring. 0 Voice call (default value)
Read command **AT+CRMP?**		Not available	
Test command **AT+CRMP=?**	Response **+CRMP: (list of supported <call type>s),(list of supported <volume>s) ,(list of supported <type>s),(list of supported <index>s)** **OK**	Test command **AT+CRMP=?**	Response **+CRMP: (list of supported <call type>s),(list of supported <volume>s), (0),(list of supported <index>s)** **OK**

20.8. +VIP: Initialize Voice Parameters

Command	Q2686x and Q2687x	HL6528x
Action command **AT+VIP=<n>**	Response **OK**	Response **OK** Parameter **<n>** Mode 0 Handset 1 Hands free 2 Handset raw 3 Ecall during voice transmission 4 Ecall during data transmission 23 PCM interface
Read command **AT+VIP?**	Response **+VIP: <n>** **OK**	Response **+VIP:<n>** **OK**

Command	Q2686x and Q2687x	HL6528x
Test command **AT+VIP=?**	Response **+VIP: (list of supported <n>s)** **OK**	Response **(list of supported <n>s)** **OK**

20.9. &T and +WMAUDIOLOOP: Auto Tests

Q2686x and Q2687x		HL6528x	
Action command **AT&T[<n>]**	Response **OK**	Action command **AT+WMAUDIOLOOP=<n>**	Response **OK** or **+CME ERROR:** Parameter **<n>** Enable or disable audio loop 0 Disable audio loop 1 Enable audio loop

21. I/O Commands

21.1. +WIOM and +KGPIOCFG: Input/output Management

The +WIOM command in the Q2686x and Q2687x has certain modes and functionalities that is not available in the HL6628x. This command's implementation in the HL6528x is described in the table below; for additional information, refer to document [1] AirPrime HL6 and HL8 Series AT Commands Interface Guide.

HL6528x	
Action command **AT+KGPIOCFG=<GpioId>,<GpioDir>,<pull mode>**	Response **OK** Parameter **<GpioId>** 1 – 8 GPIO number **<GpioDir>** Direction 0 Output 1 Input **<pull mode>** 0 Pull down. Internal pull down resistor Available. Only used in input mode 1 Pull up. Internal pull up resistor available. Only used in input mode 2 No pull. Internal pull up/down resistor not available. Only used in output mode
Read command **AT+KGPIOCFG?**	Response **+KGPIOCFG: <GpioId>,<dir>,<pull mode>[<CR><LF>** **+KGPIOCFG: <GpioId>,<GpioDir>,<pull mode>** **[...]]** **OK**

21.2. +WIOW and +KGPIO: Write GPIO value

Q2686x and Q2687x		HL6528x	
Action command **AT+WIOW=<Gpiold>, <GpioVal>**	Response **OK**	Action command **AT+KGPIO=<Gpiold>, <GpioVal>**	Response If <cde> = 2: **+KGPIO: <Gpiold>, <current_value>** **OK** else: **OK** Parameter **<Gpiold>** 1 – 8 Selected IO

22. Battery Commands

22.1. +ADC and +KADC: Analog to Digital Converters Measurements

The ADC implementation of the Q2686x and Q2687x is different from that of the HL6528x.

For more information, refer to document [1] AirPrime HL6 and HL8 Series AT Commands Interface Guide for the HL6528x implementation, and to the AT commands guides listed in section 2.2 References for AirPrime Q2686x and Q2687x for the Q2686x and Q2687x implementation.

<table>
<tr><th colspan="2">Q2686x and Q2687x</th><th colspan="2">HL6528x</th></tr>
<tr><td>Action command
AT+ADC=<mode>, <ADCIdx></td><td>Response
+ADC: <mode>,<ADCValue>
OK</td><td>Action command
AT+KADC=<Meas id>, <Meas time></td><td>Response
+KADC: <Meas result>,<Meas id>, <Meas time>,<burst power>

Parameters
<Meas id> Measurement ID
0 Reserved
2 Reserved
3 Reserved
4 ADCaux0
5 Reserved
6 Reserved
7 ADCaux1

<Meas time>
Measurement time
1 During TX
2 Far from TX
3 No constraint

<Meas result>
Measurement result in µV</td></tr>
<tr><td>Read command
AT+ADC?</td><td></td><td colspan="2">Not available</td></tr>
</table>

Q2686x and Q2687x		HL6528x	
Test command **AT+ADC=?**	Response **+ADC: <ADCIdx>, <AnalogMinVolt>, <AnalogMaxVolt>, <Resolution>** **[+ADC: <ADCIdx>, <AnalogMinVolt>, <AnalogMaxVolt>, <Resolution> […]]** **OK**	Test command **AT+KADC=?**	Response **+KADC: (list of supported <Meas id>s),(list of supported <Meas time>s)** **OK**

23. CPHS Commands

23.1. +CPHS and *PSVMWN: CPHS Command

Q2686x and Q2687x		HL6528x	
Action command **AT+CPHS=<Mode>, <FctId>**	Response **OK**	Action command **AT*PSVMWN=<mode>**	Response **OK** Parameter **<Mode>** 0 Disable presentation of notification 1 Enable presentation of notification
Read command **AT+CPHS?**	Response **+CPHS: <FctId>[,<Status>]** **[+CPHS: <FctId>[,<Status>][…]]** **OK**	Read command **AT*PSVMWN?**	Response ***PSVMWN: <current mode>** **OK**
Test command **AT+CPHS=?**	Response **OK**	Test command **AT*PSVMWN=?**	Response ***PSVMWN: (list of supported <mode>s)** ***PSVMWN: (list of supported <mode>s)** **OK**
Unsolicited response	**+WVMI: <LineId>, <VoiceMailStatus>** **+WDCI: <LineId>, <DivertedStatus>**		***PSVMWI: <line Id >, <VoiceMailStatus>** Parameter **<line Id>** 1 Line 1 2 Aux. Line 3 Data

23.2. +WMBN and *PSMBNB: Sierra Wireless CPHS Mail Box Number

Q2686x and Q2687x		HL6528x	
Action command **AT+WMBN=<LineId> [,<number>,[<type>], [<text>]]**	Response **OK**	Action command **AT*PSMBNB=<LineId> [,<number>,<type> [,<text>]]**	Response **OK** Parameter **<Line Id>** 1 Line 1 2 Aux. line 3 Data
Read command **AT+WMBN?**	Response **OK**	Read command **AT*PSMBNB?**	Response **[*PSMBNB: <Line Id> , <number> , <type> , <text> [[...] <CR> <LF>** ***PSMBNB: <Line Id> , <number> , <type> , <text>]]** **OK**
Test command **AT+WMBN=?**	Response **OK**	Test command **AT*PSMBNB=?**	Response ***PSMBNB: (list of supported <Line Id>s),(List of supported <type>s), [<nlength>],[<tlength>]** **OK** Parameters **<nlength>** Integer type value indicating the maximum length of field <number> **<tlength>** Integer type value indicating the maximum length of field <text>

23.3. +WALS and *PSALS: Sierra Wireless Alternate Line Service

Q2686x and Q2687x		HL6528x	
Action command **AT+WALS=<CmdType> [,<LineId>]**	Response **[+WALS: <LineId>]** **OK**	Action command **AT*PSALS=<LineId>**	Response **OK** Parameter **<LineId>** 1 Line 1 2 Line 2 (auxiliary line if ALS supported)
Read command **AT+WALS?**	Response **+WALS: <LineId>** **OK**	Read command **AT*PSALS?**	Response ***PSALS: <LineId>** **OK**
Test command **AT+WALS=?**	Response **+WALS: (list of supported <CmdType>s),(list of supported <LineId>s)** **OK**	Test command **AT*PSALS=?**	Response ***PSALS: (list of supported <line Id>s)** **OK**

24. Remote Device Management Services Commands

24.1. +WDSC: Device Services Configuration

Q2686x and Q2687x		HL6528x	
Action command For <Mode> = 0, 1, 2, 3: **AT+WDSC=<Mode>, <State>** For <Mode> = 4: **AT+WDSC=<Mode>,<Timer_1> [[,<Timer_2>]... [,<Timer_n>]]** For <Mode> = 5: **AT+WDSC=<Mode>, <Config> [,<ValidityPeriod>]** **OK**	Response **OK**	Action command For <Mode> = 0, 1 ,2, 3: **AT+WDSC=<Mode>, <State>** For <Mode = 4: **AT+WDSC=<Mode>, <timer_1> [[,<Timer_2>]… [,<Timer_n>]]**	Response **OK** or **+CME ERROR <err>**
Read command **AT+WDSC?**	Response **+WDSC: 0,<State>** **+WDSC: 1,<State>** **+WDSC: 2,<State>** **+WDSC: 3,<State>** **+WDSC: 4,<Timer_1> [[,<Timer_2>]... [,<Timer_n>]]** **+WDSC: 5,<State>, [<ValidityPeriod>]** **OK**	Read command **AT+WDSC?**	Response **+WDSC: 0,<State>** **+WDSC: 1,<State>** **+WDSC: 2,<State>** **+WDSC: 3,<State>** **+WDSC: 4,<Timer_1> [[,<Timer_2>]… [,<Timer_n]]** **OK**
Test command **AT+WDSC=?**	Response **+WDSC: (list of supported <Mode>s), (list of supported <State>s) [,(list of supported <Timer_n>s)]** **OK**	Test command **AT+WDSC=?**	Response **+WDSC: (0-2), (list of supported <State>s)** **+WDSC: 3, (list of supported <State>s)** **+WDSC: 4, (list of supported <Timer_n>s)** **OK**

24.2. +WDSS: Device Services Session

Q2686x and Q2687x		HL6528x	
Action command For <Mode> = 0: **AT+WDSS=<Mode>, <Apn>[,<User> [,<Pwd>]]** For <Mode> = 1: **AT+WDSS=<Mode>, <Action>** For <Mode> = 2: **AT+WDSS=<Mode>** **OK**	Response **OK**	Action command For <Mode> = 0: **AT+WDSS=<Mode>, <Apn>[,<User> [,<Pwd>]]** For <Mode> = 1: **AT+WDSS=<Mode>, <Action>**	Response **OK** or **+CME ERROR <err>**
Read command **AT+WDSS?**	Response **[+WDSS: 0,<Apn>[,<User>]]** **[+WDSS: 1,<Action>]** **[+WDSS: 2,<State>]** **OK**	Read command **AT+WDSS?**	Response **[+WDSS: 0,<Apn>[,<User>]]** **[+WDSS: 1,<Action>]** **OK**
Test command **AT+WDSS=?**	Response **+WDSS: 0,(Max length for <Apn>),(Max length for <User>),(Max length for <Pwd>)** **+WDSS: 1,(list of supported <Action>s for this <Mode>)** **+WDSS: 2,(list of supported <State>)** **OK**	Test command **AT+WDSS=?**	Response **+WDSS: 0,(Max length for <Apn>),(Max length for <User>),(Max length for <Pwd>)** **+WDSS: 1,(list of supported <Action>s for this <Mode>)** **OK**

24.3. +WDSI: Device Services Indications

Command	Q2686x and Q2687x	HL6528x
Action command **AT+WDSI=<Level>**	Response **OK**	Response **OK** or **+CME ERROR <err>** Parameter **<Level>** Indication level, bit field (default value = 0) Bit set to 0 Indication deactivated Bit set to 1 Indication activated 0 No indication 1 Activate the initialization end indication (<Event> = 0) 2 Activate the server request for a user agreement indication (<Event> = 1, 2 and 3) 4 Activate the authentication indications (<Event> = 4 and 5) 8 Activate the session start indication (<Event> = 6, 7 and 8) 16 Activate the package download indications (<Event> = 9, 10 and 11) 32 Activate the certified downloaded package indication (<Event> = 12 and13) 64 Activate the update indications (<Event> = 14, 15 and 16) 128 Activate the fallback indication (<Event> = 17) 256 Activate download progress indication (<Event> = 18) 512 Reserved 1024 Reserved 2048 Activate provisioning indication (<Event> = 21) 4096 Reserved
Read command **AT+WDSI?**	Response **[+WDSI: <Level>** **OK**	Response **[+WDSI: <Level>]** **OK**

Command	Q2686x and Q2687x	HL6528x
Test command **AT+WDSI=?**	Response **+WDSI: (list of supported <Level>s)** **OK**	Response **+WDSI: (list of supported <Level>s)** **OK**
Unsolicited response	**+WDSI: <Event>[,Data>]**	**+WDSI: <Event>[,<Data>]** Parameters **<Event>** 0 Device services are initialized and can be used. Devices services are initialized when the SIM PIN code is entered and a dedicated NAP is configured (see +WDSS command) 1 The Device Services server requests the device to make a connection. The device requests a user agreement to allow the embedded module to make the connection. The response can be sent using +WDSR command and this indication can be returned by the device if the user has activated the user agreement for connection (see +WDSC command for more information) 2 The Device Services server requests the device to make a package download. The device requests a user agreement to allow the embedded module to make the download. The response can be sent using +WDSR command and this indication can be returned by the device if the user has activated the user agreement for download (see +WDSC command for more information). 3 The device has downloaded a package. The device requests a user agreement to install the downloaded package. The response can be sent using +WDSR command and this indication can be returned by the device if the user has activated the user agreement for install (see +WDSC command for more information). 4 The embedded module starts sending data to the server

Command	Q2686x and Q2687x	HL6528x
		5 Authentication with the server failed 6 Authentication has succeeded, a session with the server started 7 Session with the server failed 8 Session with the server is finished 9 A package is available on the server and can be downloaded by the embedded module. A <Data> parameter is returned indicating the package size in kB 10 A package was successfully downloaded and stored in flash 11 An issue happens during the package download. If the download has not started (+WDSI: 9 indication was not returned), this indication indicates that there is not enough space in the device to download the update package. If the download has started (+WDSI: 9 indication was returned), a flash problem implies that the package has not been saved in the device 12 Downloaded package is certified to be sent by the AirPrime Management Services server 13 Downloaded package is not certified to be sent by the AirPrime Management Services server 14 Update will be launched 15 OTA update client has finished unsuccessfully 16 OTA update client has finished successfully 17 A fallback mechanism was launched 18 Download progress. This event is returned without <Data> parameter to indicate that a download starts. During the download, a percentage progress is indicated in <Data> parameter 19 Reserved 20 Reserved 21 A provision was made by the AirPrime Management Services server 22 Reserved

Command	Q2686x and Q2687x	HL6528x
		<Data> Specific data for some <Event> For<Event>=9, <Data> indicates the package size in bytes, which will be downloaded For<Event>=17, <Data> indicates if the fallback was asked by the user or applied because a recovery was necessary automatic recovery (a recovery mechanism was made) fallback asked by the user (see +WDSF for more information) For<Event>=18, <Data> indicates the download progress in percentage For <Event>=21, <Data> indicates the provisioned parameters (see +WDSC command for more information) Other values are reserved.

24.4. +WDSD: Device Services Local Download

Command	Q2686x and Q2687x	HL6528x
Action command **AT+WDSD=<Size>**	Response **<Nack>** **OK**	Response **<NACK>** ***// User sends data*** **OK** or **+CME ERROR <err>** Parameter **<Size>** Package size in bytes. Value in range 0 to 491520
Test command **AT+WDSD=?**	Response **+WDSD: (list of supported <Size>s)** **OK**	Response **+WDSD: (list of supported <Size>s)** **OK**

25. Internet Library Commands

The Q2686x and Q2687x has a different mechanism for setting up an IP connection compared to the HL6528x. In the HL6528x, commands are implemented in a “per protocol” arrangement. For example, the command used to configure the connection is dependent on the protocol that will be used at the highest level i.e.: KFTPCFG, KUDPCFG, KHTTPCFG, KHTTPSCFG etc.

Due to this difference, it is impossible to perform a comparison between the internet library commands between the modules. For specific examples, contact your Sierra Wireless representative or FAE.

For detailed information about HL6528x internal protocol commands, refer to document [1] AirPrime HL6 and HL8 Series AT Commands Interface Guide.

The following enumerates some of the TCP commands, followed by an example on how to create a TCP connection using the HL6528x.

- KTCPCFG: Used to configure TCP connection
- KTCPCNX: Used to start the TCP connection
- KTCPCLOSE: Used to close the TCP socket
- KTCPSND: Used to send the data over TCP connection
- KTCPRCV: Used to receive the data over TCP connection

Example of a TCP (client mode) configuration on the HL6528x:

```
AT+KCNXCFG=1,"GPRS","APN","log","password","0.0.0.0","0.0.0.0","0.0.0.0"
OK
AT+KTCPCFG=1,0,"www.google.com",80
+KTCPCFG: 1
OK

AT+KTCPCNX=1
OK

AT+KTCPSND=1,18
CONNECT
…Data send…
OK

+KTCP_DATA: 1,1380
AT+KTCPRCV=1, 1380
CONNECT
HTTP/1.0 200 OK

Cache-Control: private, max-age=0
… a lot of data…
--EOF--Pattern—
OK

+KTCP_DATA: 1,1380
AT+KTCPRCV=1,1380
CONNECT
er{padding-bottom:7px !important}#gbar,#guser{font-
… a lot of data…
--EOF--Pattern—
OK

+KTCP_DATA: 1,1380
AT+KTCPCLOSE=1,1
OK

AT+KTCPCFG?
OK
```

26. Location Library Commands

Note: Commands in this section are only applicable to HL6528x–G versions.

26.1. +GPSNMEA: Configure NMEA Frames Flow

Command	Q2686x and Q2687x	HL6528x-G
Action command **AT+GPSNMEA=[<output>][,[<rate>][,<nmea_mask>],[<nmea_profile>]]**	Response **<Nack>** **OK**	Response **OK** Parameters **<output>** Specifies the port which will be used by the application to transmit NMEA frames. This port can also be used simultaneously as the PVT sentence output port if needed. This parameter is a hexadecimal value and is entered without the prefix “0x” 0x00 NMEA frames are not output 0x01 NMEA frames output on UART1 0x02 NMEA frames output on UART2 (not supported) 0x03 NMEA frames output on USB (not supported on the HL6528x-G) 0x04 NMEA frames output on port where the +GPSNMEA command was received **<nmea_mask>** Defines the NMEA sentences encode mask. This parameter is a hexadecimal value and is entered without the prefix “0x”. Range: 0x0 - 0xFFFF. This parameter gets the last known value within the current session if omitted. 0xFFFF Factory default value (0x0) *GPS_NMEA_NONE_EN* All NMEA frames output are disabled (1 << 0) *GPS_NMEA_GGA_EN* (NMEA $GPGGA) GPS Fix Data

Command	Q2686x and Q2687x	HL6528x-G
		(1 << 1) *GPS_NMEA_GGSA_EN* (NMEA $--GSA GNSS) DOPS and Active Satellites (1 << 2) *GPS_NMEA_RMC_EN* (NMEA $--RMC) Recommended Minimum GNSS Sentence (1 << 3) *GPS_NMEA_VTG_EN* (NMEA $--VTG) Course Over Ground and Ground Speed (1 << 4) *GPS_NMEA_GLL_EN* (NMEA $--GLL) Geographic Position - Latitude, Longitude (1 << 5) *GPS_NMEA_GST_EN* (NMEA $--GST) GNSS Pseudorange Error Statistics (1 << 6) *GPS_NMEA_GSV_EN* (NMEA $--GSV) GNSS Satellites in View (1 << 7) *GPS_NMEA_ZDA_EN* (NMEA $--ZDA) Time & Date (1 << 8) *GPS_NMEA_GNS_EN* (NMEA $--GNS) GNSS Fix Data. The GPS Proprietary diagnostics data output are enabled (0xFFFF) *GPS_NMEA_ALL_EN* All NMEA frames output supported by the GPS receiver are enabled.
Read command **AT+GPSNMEA?**	Response **+GPSNMEA: <output>,<rate>, <nmea_mask>,<nmea_profile>** **OK**	Response **+GPSNMEA:<output>,<rate>, <nmea_mask>, <nmea_profile>** **OK**
Test command **AT+GPSNMEA=?**	Response **+GPSNMEA: (list of supported <output>s),(list of supported <rate>s), (list of supported <nmea_mask>s), (list of supported <nmea profile>s)** **OK**	Response **+GPSNMEA: (list of supported <output>s),(list of supported <rate>s), (list of supported <nmea_mask>s), (list of supported <nmea_profile>s)** **OK**

26.2. +GPSPVT: Configure PVT Frames Flow

Command	Q2686x and Q2687x	HL6528x-G
Action command **AT+ GPSPVT=<output>[,[<rate>][,<pvt_mask>]]**	Response **<Nack>** **OK**	Response **OK** Parameter **<output>** Specifies the port to be used by the application to transmit PVT sentences. This port can also be used simultaneously as the NMEA frames output port if needed. This parameter is a hexadecimal value and is entered without the prefix “0x”. 0x00 PVT frames are not output 0x01 PVT frames output on UART1 0x02 PVT frames output on UART2 (not supported) 0x03 PVT frames output on USB (not supported) 0x04 PVT frames output on port where the +GPSPVT command was received. 0x101 PVT frames output on I2C
Read command **AT+GPSPVT?**	Response **+GPSPVT: <output>,<rate>,<pvt_mask>** **OK**	Response **+GPSPVT: <output>,<rate>,<pvt_mask>** **OK**
Test command **AT+GPSPVT=?**	Response **+GPSPVT: (list of supported <output>s),(list of supported <rate>s), (list of supported <pvt_mask>s)** **OK**	Response **+GPSPVT: (list of supported <output>s), (list of supported <rate>s),(list of supported <pvt_mask>s)** **OK**

26.3. +GPSINIT: Initialize Location Service

Q2686x and Q2687x		HL6528x-G	
Action command **AT+GPSINIT=<hw>[,<bus_type>,<bus_number>,<on_off>,<reset>,<gps_wakeup>,<host_wakeup>,<clock32k>,<appli_led>]**	Response **OK**	Action command **AT+GPSINIT=<hw>**	Response **OK** Parameter **<hw>** Hardware type or configuration for initialization. This parameter gets the last known value within the current session if omitted. 41 HL6528x-G integrating SiRFVe GNSS receiver (factory default value)
Read command **AT+GPSINIT?**	Response **+GPSINIT:<hw>,<bus_type>,<bus_number>,<on_off>,<reset>,<gps_wakeup>,<host_wakeup>,<clock32k>,<appli_led>** **OK**	Read command **AT+GPSINIT?**	Response **+GPSINIT: <hw>** **OK**
Test command **AT+GPSINIT=?**	Response **+GPSINIT: (list of supported <hw>s),(list of supported <bus_type>s),(list of supported <bus_number>s),(list of supported <on_off>s),(list of supported <reset>s),(list of supported <gps_wakeup>s),(list of supported <host_wakeup >s),(list of supported <clock32k>s),(list of supported <appli_led>s)** **OK**	Test command **AT+GPSINIT=?**	Response **+GPSINIT: (list of supported <hw>s)** **OK**
Unsolicited response	**+GPSEVINIT: <status>**	Unsolicited response	**+GPSEVINIT: <status>**

26.4. +GPSVERS: Report Software Version

Command	Q2686x and Q2687x	HL6528x-G
Read command **AT+GPSVERS?**	Response **+GPSVERS:<version>** **OK**	Response **+GPSVERS: <version>** **OK** Parameter **<version>** Patch version of location library
Test command **AT+GPSVERS=?**	Response **OK**	Response **OK**

26.5. +GPSCONF: Configure Location Service

Command	Q2686x and Q2687x	HL6528x-G
Action command **AT+GPSCONF=<config_type>, <config_value>**	Response **OK**	Response **OK** Parameters **<config_type>** This parameter specifies the configuration type on which the configuration value is applied. 0 Sets GPS navigation low power modes. Reduces power consumption while in GPS_RUNNING state without impacting update rate, but at the expense of GPS accuracy degradation 1 Sets the LNA type 7 Defines CW Removal configuration (Jamming) **<config_value>** Requested value of configuration type. For <config_type>=0: 0 Full power navigation mode 1 Medium power navigation mode 3 Low power navigation mode (not supported)

Command	Q2686x and Q2687x	HL6528x-G
		For <config_type>=1: 0 Internal LNA set to high gain and GPS receiver LNA_EN output signal is automatically driven 1 Internal LNA set to low gain and GPS receiver LNA_EN output signal is automatically driven 2 Internal LNA seto to high gain and GPS receiver LNA_EN output signal is always OFF 3 Internal LNA set to low gain and GPS receiver LNA_EN output signal is always OFF If omitted, this parameter gets the last known value within the current session. For <config_type>=7, this defines CW Removal configuration. 0 Disabled 1 Enabled If omitted, this parameter gets the last known value within the Current session.
Read command **AT+GPSCONF?**	Response **+GPSCONF: <config_type>,<config_value>** **[+GPSCONF: <config_type>,<config_value>]** **OK**	Response **+GPSCONF: <config_type>, <config_value>** **[+GPSCONF: <config_type>,<config_value>]** **OK**
Test command **AT+GPSCONF=?**	Response **+GPSCONF:<config_type>,(list of supported <config_value>s)** **[+GPSCONF:<config_type>,(list of supported <config_value>s)]** **OK**	Response **+GPSCONF: <config_type>,(list of supported <config_value>s)** **[+GPSCONF: <config_type>,(list of supported <config_value>s)]** **OK**
Unsolicited response	**+GPSEVRELEASE: <status>**	**+GPSEVRELEASE: <status>**

26.6. +GPSAID: GNSS Aiding Management

Q2686x and Q2687x		HL6528x-G	
Action command For <config_type> = 0 **AT+GPSAID=<config_type>, <aee_mode>** For <config_type> = 1 **AT+GPSAID=<config_type>, <dee_mode>[,[<dee_period>][,[<dee_server_address>][,[<dee_server_port>][,[<dee_server_code>][,[<dee_socket_type>][,[<dee_timeout>]]]]]]]** For <config_type> = 2 **AT+GPSAID=<config_type>, <dee_command>**	Response **OK**	Action command For <config_type>=0 **AT+GPSAID=<config_type>, <aee_mode>** For <config_type>=1 **AT+GPSAID=<config_type>, <dee_mode>[,[<dee_period>][,[<dee_server_address>][,[<dee_server_port>][,[<dee_server_code>][,[<dee_socket_type>][,[<dee_timeout>]]]]]]]** For <config_type>=2 **AT+GPSAID=<config_type>[,[<dee_command>]**	Response **OK** Parameters **<dee_command>** DEE command number controlling the EE downloader If omitted, this parameter takes the last known value within the current session. 0 This command has no effect, but indicates that no command is pending. On HL6, the age of the EE file is also displayed in a +GPSEVAID event 1 This command requests EE file download and injection 2 This command stops EE download/injection if any ongoing 3 This command forces EE file download and injection. This command is used only for test purpose.
Read command **AT+GPSAID?**	Response **+GPSAID: 0,<aee_mode>** **+GPSAID: 1,<dee_mode>, <dee_period>, <dee_server_address>, <dee_server_port>, <dee_server_code>, <dee_socket_type>, <dee_timeout>** **+GPSAID: 2,<dee_command>** **+GPSAID: 3,1, <dee_secondary_server_address>, <dee_tertiary_server_address>**	Read command **AT+GPSAID?**	Response **+GPSAID: 0,<aee_mode>** **+GPSAID: 1,<dee_mode>, <dee_period>, <dee_server_address>, <dee_server_port>, <dee_server_code>, <dee_socket_type>, <dee_timeout>** **+GPSAID: 2,<dee_command>** **OK**

Q2686x and Q2687x		HL6528x-G	
	+GPSAID: 3,2,<dee_primary_sntp_server_address>, <dee_secondary_sntp_server_address>, <dee_tertiary_sntp_server_address> OK		
Test command AT+GPSAID=?	Response +GPSAID: 0,(list of supported <aee_mode>s) +GPSAID: 1,(list of supported <dee_mode>s),(list of supported <dee_period>s),(list of supported <dee_server_address>s),(list of supported <dee_server_port>s),(list of supported <dee_server_code>s),(list of supported <dee_socket_type>s),(list of supported <dee_timeout>s) +GPSAID: 2,(list of supported <dee_command>s) +GPSAID: 3,1,(list of supported <dee_secondary_server_address>s),(list of supported <dee_tertiary_server_address>s) +GPSAID: 3,2,(list of supported <dee_primary_sntp__server_address>s),(list of supported <dee_secondary_sntp_server_address>s),(list of supported <dee_tertiary_sntp_server_address>s) OK	Test command AT+GPSAID =?	Response +GPSAID: 0,(list of supported <aee_mode>s) +GPSAID: 1,(list of supported <dee_mode>s),(list of supported <dee_period>s),(list of supported <dee_server_address>s),(list of supported <dee_server_port>s),(list of supported <dee_server_code>s),(list of supported <dee_socket_type>s),(list of supported <dee_timeout>s) +GPSAID: 2,(list of supported <dee_command>s) OK

26.7. +GPSCORE: Report GNSS Receiver Core Information

Command	Q2686x and Q2687x	HL6528x-G
Action command **AT+GPSCORE=[<output>][,[<rate>][,<core_info>]]**	Response **OK**	Response **OK** Parameters **<output>** Port to be used by the application to transmit the core information. If omitted, this parameter takes the last known value within the current session. 0 Core information output disabled 1 Core information output on UART1 4 Core information output on port where the +GPSCORE command was received
Read command **AT+GPSCORE?**	Response **+GPSCORE: <output>,<rate>,<core_info>** **OK**	Response **+GPSCORE: <output>,<rate>,<core_info>** **OK**
Test command **AT+GPSCORE=?**	Response **+GPSCORE: (list of supported <output>s) ,(list of supported <rate>s),(list of supported <core_info>s)** **OK**	Response **+GPSCORE: (list of supported <output>s) ,(list of supported <rate>s),(list of supported <core_info>s)** **OK**

27. Network Scan Library Commands

27.1. +NWKSCAN and +KNETSCAN: Network Scan

HL6528x	
Action command **AT+KNETSCAN=<mode>[,<oper>[,<max_cells>[,<URC> [,<timeout>[,<ext]]]]]**	Response **OK** or when <mode>=2 and command successful **+KNETSCAN:<nbcells>[,<ARFCN>,<BSIC>,<PLMN>,<LAC>,<CI>,<RSSI>,<RAC>[,<ARFCNi>,<BSICi>, <PLMNi>, <LACi>,<CIi>,<RSSIi>,<RAC>]]** **OK** Parameters **<mode>** 0 Deactivate network scan 1 Activate network scan 2 Request cells information **<oper>** String type, name of the operator in numeric Format. If not specified, search entire band. **<PLMN>** PLMN identifiers (3 bytes), made of MCC (Mobile Country Code), and MNC (Mobile Network Code) **<max_cells>** 1 – 33 Maximum number of cells of which information will be given (default: 7) **<URC>** 0 No Unsolicited Result Code sent at the end of the scan 1 Unsolicited Result Code sent at the end of the scan **<timeout>** 1 – 600 Timeout in seconds for sending Unsolicited Result Code (default: 300) **<ext>** 0 Reserved for future purposes **<nbcells>** Number of base stations available (less than or equal to <max_cells>). The first base station is the serving cell.

HL6528x	
	<ARFCN> Absolute Radio Frequency Channel Number **<BSIC>** Base Station Identify Code **<LAC>** Location Area **<CI>** Cell ID, 4 hexadecimal digits, e.g. ABCD **<RSSI>** Received signal level of the BCCH carrier, decimal value from 0 to 63. The indicated value is an offset which should be added to –110 dBm to get a value in dBm. See the formula specified in TS 05.08 Radio Subsystem Link Control **<RAC>** Routing Area (for serving cell only)
Test command **AT+KNETSCAN=?**	Response **+KNETSCAN: (list of supported <mode>s), (list of supported <max_cells>s), (list of supported <URC>s), (list of supported <timeout>s), (list of supported <ext>s)** **OK**

28. Jamming Detection Command

28.1. +WJAM and +KJAM: Jamming Detection

HL6528x	
Action command **AT+KJAM=<mode>[,<continuous_detection>[,<urc_mode>[,<gpio_mode>[,<gpio_index>[,<gpio_result_threshold>]]]]]**	Response **OK** or when <mode>=2 and command successful **+KNETSCAN:<nbcells>[,<ARFCN>,<BSIC>,<PLMN>,<LAC>,<CI>,<RSSI>,<RAC>[,<ARFCNi>,<BSICi>, <PLMNi>, <LACi>,<CIi>,<RSSIi>,<RAC>]]** **OK** Parameters **<mode>** 0 Deactivate network scan 1 Activate network scan 2 Request cells information **<oper>** String type, name of the operator in numeric Format. If not specified, search entire band. **<PLMN>** PLMN identifiers (3 bytes), made of MCC (Mobile Country Code), and MNC (Mobile Network Code) **<max_cells>** 1 – 33 Maximum number of cells of which information will be given (default: 7) **<URC>** 0 No Unsolicited Result Code sent at the end of the scan 1 Unsolicited Result Code sent at the end of the scan **<timeout>** 1 – 600 Timeout in seconds for sending Unsolicited Result Code (default: 300) **<ext>** 0 Reserved for future purposes **<nbcells>** Number of base stations available (less than or equal to <max_cells>). The first base station is the serving cell.

HL6528x	
	<ARFCN> Absolute Radio Frequency Channel Number **<BSIC>** Base Station Identify Code **<LAC>** Location Area **<CI>** Cell ID, 4 hexadecimal digits, e.g. ABCD **<RSSI>** Received signal level of the BCCH carrier, decimal value from 0 to 63. The indicated value is an offset which should be added to –110 dBm to get a value in dBm. See the formula specified in TS 05.08 Radio Subsystem Link Control **<RAC>** Routing Area (for serving cell only)
Read command **AT+KJAM?**	Response **+KJAM: <mode>,<continuous_detection>, <urc_mode>, <gpio_mode>,<gpio_index>, <gpio_result_threshold>, <urc_result_threshold>** **OK**
Test command **AT+KJAM=?**	Response **+KJAM: (list of supported <mode>s),(list of supported <continuous_detection>s),(list of supported <urc_mode>s),(list of supported <gpio_mode>s), (list of supported <gpio_index>s),(list of supported <gpio_result_threshold>s),(list of supported <urc_result_threshold>s)** **OK**
Unsolicited response	**+KJAM:<result_type>,<result>,<band>[,<result>, <band>[,<result>,<band>[,<result>,<band>]]]**

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