MediaTek

AT Command Hardware Testing Support

Requirement Specification

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Revision History

Revision	Date	Author	Comments
1.0	2004/02/29	Arthur Shieh	Custom version for External use
2.0	2004/03/04	Arthur Shieh	Update +ESDP from design document , add +ESLP,+ELSM and Add a Factory testing example using AT command.
3.0	2004/03/05	Arthur Shieh	Add + ELNVRM, Update +EGMR and add Lock IMEI example

Table of Contents

1 Introduction

This document is described that MMI support for hardware testing. It can be used for production line testing and also other engineering purposes. The following test items are supported.

1.1 MT6205B-Platform GPIO General mapping table (GPIO)

This is a typical GPIO mapping in MTK reference design. The following mapping table is subject to change by realistic layout. AT command can change the state of the each following devices to test base band functions.

GPIO		
MODE	PIN NAME	Normal mode setting
GPIO0	GPIO0_REN/DAICLK	RED LED control
GPIO1	GPIO1_OPOFFB/DAITX	External AMP control
GPIO2	GPIO2_SUBBLEN/DAIRX	Sub LCD backlight control
GPIO3	GPIO3_UART_EN/DAIRST	UART connected to audio jack enable control
		After power on, GPIO3 must be setting "Low" status
GPIO4	BANDSW_DCS	RF interface
GPIO5	PA_EN	RF interface
GPIO6	GPIO6_BLDRVEN	Main LCD backlight driver control
GPIO7	BPI7/VCO_EN	RF interface
GPIO8	LCD_DATA	Sub LCD interface
GPIO9	LCD_A0	Sub LCD interface
GPIO10	LCD_CLK	Sub LCD interface
GPIO11	/LCD_CS0	Sub LCD interface
GPIO12	GPIO12_CHRCNTL	Charging control
GPIO13	GPIO13_GEN	GREEN LED control
GPIO14	GPIO14_XPGA	External AMP gain control - 1X or 4X
GPIO15	GPIO15_VIBEN	Vibrator control
GPIO16	KPLED_PWM	Keypad PWM control
GPIO17	UCTS2	UART2 CTS
GPIO18	URTS2	UART2 RTS
GPIO19	URXD2	UART2 RXD
GPIO20	UTXD2	UART2 TXD

GPO0	A22	A22
GPO1	GPO1_BLEN_PWM	Main LCD backlight PWM control
GPO2	VCXO_EN	RF interface
GPO3	GPO3_BEN	BLUE LED control : H enable (GPO out)
PWM		
PWM1	KPLED_PWM	Keypad PWM control
PWM2	GPO1_BLEN_PWM	Main LCD backlight PWM control
IRQ		
GPIO21	reserve	reserve
EINT0	EINT0_EARPHONE	Earphone plug-in interrupt
EINT1	EINT1_CHRDET	Charger plug-in interrupt
EINT2	EINT2_CLAMDET	Clam shell open/close interrupt
ADC		
ADC0	ADC0_I-	VBAT voltage
ADC1	ADC1_TBAT	Battery temperature
ADC2	ADC2	Audio jack MIC pin voltage
ADC3	ADC3_I+	Charging current (used with ADC0_I-)
ADC4	ADC4	reserved
CHIP SELECT		
	MT6205B	
/CS0	FLASH	
/CS1	SRAM	
/CS2	reserve	
/CS3	CSTN_/CS	

2 For Factory testing

2.1 Factory Test Mode

Press “*#66*#” to enter factory test mode in MMI.

NO	Item	Description	AT Command	Comment
1.	S/W Version	Get software version	+EGMR	
2.	HW Version	Get the required hardware version	+EGMR	
3.	Melody Version	When new version is downloaded, the version will be updated automatically.	+EGMR	
4.	ISN	Serial number from barcode.	+EGMR	
5.	LED	Toggle GPIO	+EGPIO	
6.	LCD	RGBW Color switch test	+ELCM	
7.	LCD Contrast	LCD Contrast Adjust	+ELCD	
8.	Keypad	LCD will show the character of the keypad that is pressed.	+EKPD	
9.	Speech (Analog loop back mode)	Test speech in handset(normal) /speaker phone(loud speaker)/ headset mode(earphone-mic)	+ESLT +EALT	
10.	Vibrator	Test Vibrator on/off	+EGPIO	
11.	ADC	1. Main Battery: Show voltage value	+EADC	
		2. Charger: Show voltage value. Current value is optional.	+EADC	
12.	SIM	Indicate if SIM is inserted or not.	+ESIMS	
13	Interrupt test	Read charger status Read Earphone status	+CEMS	

2.2 Miscellany

NO	Item	Description	AT Command	Comment
1	IMEI	Write IMEI Lock NVRAM including IMEI	+EGMR +ELNVRM	
2	Sleep mode	Enable/Disable Sleep mode Enable/Disable LCM backlight sleep	+ESLP +ELSM	

3 For Engineering testing

Engineering Test Mode

NO	Item	Description	AT Command	Comment
1	LCM setting	➢ Select Contrast level ➢ Select bias ratio ➢ Select Line rate ➢ Select temperature compensation value	+ELCD	
		➢ Set Main LCD contrast default value into NVRAM user data items	+ESLCD	
2	GPIO setting	Each pins used as GPIOs/GPOs can be set to "H" or "L" respectively.	+EGPIO	
3	PWM control	➢ Keypad backlight ➢ LCM backlight ➢ Flashlight ➢ Set PWM hardware default value	+EPWM +ESHW	
4	Interrupt Detection	➢ EINT0 : Charger status ➢ EINT1 : Earphone status	+CEMS +GPIOS +BATS	+GPIOS and +BATS is the unsolicited result code when turn on +CEMS
5	ADC value	➢ ADC0 : Battery voltage ➢ ADC0,ADC3 : charging current ➢ ADC1 : Temperature of battery ➢ ADC2 : Headset send/end key detect => (send/end/no key pressed) ➢ ADC4 : Charger voltage	+EADC	
6	Audio	➢ Normal mode setting ➢ Speaker phone mode setting ➢ Headset mode setting ➢ Audio Sound Play operation	+EADP +CASP	

4 Engineering mode AT command

4.1 AT+ESLP

4.1.1 Description

This Command is used to enable and disable sleep mode in the mobile.

4.1.2 Direction and Format

APP->RMMI

Execution command : AT+ ESLP = <op>

Test command : AT+ ESLP =? Show if the command is supported

4.1.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	enable	1
			disable	0

4.1.4 Response

Test command : + ESLP: (0/1)

Execution command : OK

4.2 AT+ELSM

4.2.1 Description

This Command is used to enable and disable LCM backlight sleep in the mobile.

4.2.2 Direction and Format

APP->RMMI

Execution command : AT+ ELSM = <op>

Test command : AT+ ELSM =? Show if the command is supported

4.2.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	enable	1
			disable	0

4.2.4 Response

Test command : + ELSM: (0/1)

Execution command : OK

4.3 AT+CEMS

4.3.1 Description

This Command is used to command to turn on the engineer mode so that any indication will pass to as unsolicited result code to TA.

4.3.2 Direction and Format

APP->RMMI

Execution command : AT+ CEMS = <mode>

Read command : AT+ CEMS? Return the item id list

Test command : AT+ CEMS =? Show if the command is supported

4.3.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	mode	mode	Off	0
			on	1

4.3.4 Response

Read command : + CEMS: <mode>

OK

Test command : + CEMS: (0,1)

Execution command : OK

4.3.5 Unsolicited result code

+BATS: <status>

Description: This is indication report the battery status to MMI.

Type	Short name	Long name	Parameter/comment	
Integer	status	Battery status	PMIC_VBAT_STATUS	0
			PMIC_CHARGER_IN	1
			PMIC_CHARGER_OUT	2
			PMIC_OVERVOLPROTECT	4
			PMIC_OVERBATTEMP	5
			PMIC_OVERCHARGECURRENT	6
			PMIC_CHARGE_COMPLETE	7
			PMIC_LOW_BATTERY	8
			PMIC_LOW_BATTERY_POWER_OFF	9
			PMIC_INVALID_BATTERY	10

+GPIOS: <device>,<status>

Description: This is indication report the GPIO device status to MMI.

Type	Short name	Long name	Parameter/comment

Integer	device	gpio device	EXT_DEV_NONE	0
			EXT_DEV_HANDFREE	1
			EXT_DEV_EARPHONE	2
			EXT_DEV_CARKIT	3
			EXT_DEV_UART	4
			EXT_DEV_CLAM	5
			EXT_DEV_SEND	6
			EXT_DEV_END	7
integer	status	device status	Off	0
			On	1

4.4 AT+EADP

4.4.1 Description

This Command is used to set and get audio profile command.

4.4.2 Direction and Format

APP->RMMI

Execution command : AT+ EADP = <op>,<mode>,<audio type>,<level>,[<gain>]

Test command : AT+ EADP =? Show if the command is supported

4.4.3 Field

Type	Short name	Long name	Parameter/comment	
integer	Op	operation	Get	0
			Set	1
integer	mode	audio mode	Normal mode	0
			Headset mode	1
			Loud speaker mode	2
integer	type	audio type	Melody	0
			Keytone	1
			Speech	2
			mic	3
			sidetone	4
integer	level	volume level	0-6	
integer	gain	gain value	0-254	

4.4.4 Response

Test command : +EADP: (0,1),(0-2),(0-4),(0-6),(0-254)

Execution command : OK

Example:

1. Get Audio mode with Normal Mode , Melody type, volume level is 0. The return value with gain 40

at+eadp=0,0,0,0

```
+EADP: 40

OK
2.Set Normal Mode , Melody type, volume level with 0 and gain is 99
at+eadp=1,0,0,0,99

OK
```

4.5 AT+EGPIO

4.5.1 Description

This Command is used to set gpio values to driver.

4.5.2 Direction and Format

APP->RMMI

Execution command : AT+ EGPIO = <type>,<level>
Read command : AT+ EGPIO? Return the level of specified type
Test command : AT+ EGPIO =? Show if the command is supported

4.5.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	type	Device type	GPIO_LABELID_0	0
			GPIO_LABELID_1	1
			GPIO_LABELID_2	2
			GPIO_LABELID_3	3
			GPIO_LABELID_4	4
			GPIO_LABELID_5	5
			GPIO_LABELID_6	6
			GPIO_LABELID_7	7
			GPIO_LABELID_8	8
			GPIO_LABELID_9	9
			GPIO_LABELID_10	10
			GPIO_LABELID_11	11
			GPIO_LABELID_12	12
			GPIO_LABELID_13	13
			GPIO_LABELID_14	14
			GPIO_LABELID_15	15
			GPIO_LABELID_16	16
			GPIO_LABELID_17	17
			GPIO_LABELID_18	18
			GPIO_LABELID_19	19
			GPIO_LABELID_20	20
integer	level	Device level	on	1
			off	0

4.5.4 Response

Read command : + EGPIO: <type>,<level>
OK
Test command : + EGPIO: (0-20),(0,1)
OK
Execution command : OK

Example:
1.Set the GPIO value with GPIO type GPIO_LABELID_20 , Device level turn on
at+egpio=20,1

OK

4.6 AT+EADC

4.6.1 Description

This Command is used to turn on/off the ADC channel indication to MMI

4.6.2 Direction and Format

APP->RMMI
Execution command : AT+ EADC = <op>
Read command : AT+ EADC? Return the current setting of on/off
Test command : AT+ EADC =? Show if the command is supported

4.6.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	opeartion	on	1
			off	0

4.6.4 Response

Read command : + EADC: <op>
OK
Test command : + EADC: (0,1)
Execution command : OK

4.6.5 Unsolicited result code

+EADC: <ADC0 **>,<** ADC1 **>,<** ADC2 **>,<** ADC3**>,<** ADC4 **>**
Description: This is indication report the battery status to MMI.

Type	Short name	Long name	Parameter/comment	
integer	value	ADC value	Battery voltage	(micro-voltage)
			Battery temperature	(1/100 C)
			AUX voltage	(micro-voltage)
			Charge current	(micro A)
			Charger voltage	(micro-voltage)

4.7 AT+ELCD

4.7.1 Description

This command is used to retrieve LCD parameter form RMMI/LMMI.

4.7.2 Direction and Format

APP->RMMI

Execution command : AT+ ELCD = <op>,<lcd>,[<type>,[“ *value1*.*value2*.*value.3*”s]]

Test command : AT+ ELCD =? Show if the command is supported

4.7.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	Gets number of parameters for related lcd operation function.	0
			Set the value of the function for test	1
			Get the whole value of the function	2
			Save the whole value of the function	3
Integer	Lcd	Lcd type	MAIN	0
			SUB	1
integer	type	function type	bias function	0
			contrast function	1
			line rate function	2
			temperature compensation function	3

4.7.4 Response

Read command : + ELCD: list of supported <id>s
OK

Test command : + ELCD: (0-3)

Execution command : OK

Example:
1.Get th main LCD, bias function parameters number
at+elcd=0,0,0

+ELCD: 3

OK
2.Get the main LCD , all function parameter value
at+elcd=2,0

+ELCD: "0.0.0","0.0.0","0.0.0","0.0.0"

OK
3.save parameter value with main LCD , the three set of each function is separate be comma.
at+elcd=3,0,"1.4.6","4.5.6","2.4.7","8.7.6"

OK

at+elcd=2,0(read the save value by setting)

+ELCD: "1.4.6","4.5.6","2.4.7","8.7.6"

OK
4.test with main LCD type, bias function, and the value is 8, 8, 8
at+elcd=1,0,1,"8.8.8"

OK

4.8 AT+EPWM

4.8.1 Description

This Command is used to engineering mode with PWM frequency and duty cycle value set and start/stop operation.

4.8.2 Direction and Format

APP->RMMI

Execution command : AT+ EPWM = <op>,<type>,[<level>],[<freq>,<duty>]

[AT+EPWM = **0**, <type>,<level>]
[AT+EPWM = **1**, <type>,<level>,<freq>,<duty>]
[AT+EPWM = **2**, <type>,<freq>,<duty>]
[AT+EPWM = **3**, <type>]

Read command : AT+ EPWM? Return the item id list
Test command : AT+ EPWM =? Show if the command is supported

4.8.3 Field

Type	Short name	Long name	Parameter/comment	
integer	op	operation	Get level value	0
			Set level value	1
			Start Test	2
			Stop Test	3
Integer	type		PWM1(LCM backlight)	0
			PWM2(Keypad backlight)	1
			Alter(Flashlight LED)	2
Integer	level	level	0~4	
integer	freq	frequency	in unit of Hz	
Integer	duty	duty cycle	percentage	

4.8.4 Response

Read command : + EPWM: list of supported <id>s
OK
Test command : + EPWM: <item idx>

Execution command : OK

Example:
1.Get the LCM back light value of level 1 for each type , return value was freq, duty
at+epwm=0,0,1

+EPWM: 0,0

OK
2. Set keypad back light level 2 , freq and duty is 3 and 4
at+epwm=1,1,2,3,4

OK

3.Start PWM1 and the frequency is 4 , the duty is 6
at+epwm=2,1,4,6

OK
4.Stop PWM1 and the frequency is 4 , the duty is 6
at+epwm=3,1

OK

4.9 AT+ELCM

4.9.1 Description

This Command is used to turn on/off the LCM RGBW test .We have four different color for testing. The color type normal is to stop this test.

4.9.2 Direction and Format

APP->RMMI

Execution command : AT+ ELCM = <color>

Test command : AT+ ELCM =? Show if the command is supported

4.9.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	color	Color type	R(red)	0
			G(green)	1
			B(blue)	2
			W(white)	3
			Normal(stop)	4

4.9.4 Response

Test command : + ELCM: (0~4)

Execution command : OK

4.10 AT+EKPD

4.10.1 Description

This Command is used to turn on/off the keypad event report to UART.

4.10.2 Direction and Format

APP->RMMI

Execution command : AT+ EKPD = <op>

Read command : AT+ EKPD? Return the current setting of on/off

Test command : AT+ EKPD =? Show if the command is supported

4.10.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	opeartion	on	1
			off	0

4.10.4 Response

Read command : + EKPD: <op>

OK

Test command : + EKPD: (0,1)

Execution command : OK

4.10.5 Unsolicited result code

+EKPDS: <status **>,<** code **>**

Description: This is indication report the keypad event to MMI.

Type	Short name	Long name	Parameter/comment	
integer	status	Key status	Key Press	0
			Key Release	1
integer	code	Key code	“0”-“9”	0-9
			“*”	10
			“#”	11
			“U/u”	12
			“D/d”	13
			“V/v”	14
			“^”	15
			“<”	16
			“>”	17
			“M/m”(reserved)	18
			“F/f” (reserved)	19
			“[“	20
			“]”	21
			“S/s”	22
			“E/e”	23
			“P/p” (reserved)	24

Example:
AT+EKPD = 1;
After push key “1” and release, the following key event will report as follow.
+EKPD: 0,1

+EKPD:1,1

4.11 AT+ESAM

4.11.1 Description

This Command is used to set audio mode. We have three audio mode , normal, loud speaker andhandset.

4.11.2 Direction and Format

APP->RMMI
Execution command : AT+ ESAM = <mode>
Test command : AT+ ESAM =? Show if the command is supported

4.11.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	mode	Audio mode	normal	0
			loudspeaker	1
			handset	2

4.11.4 Response

Test command : + ESAM: (0-2)
Execution command : OK

4.12 AT+ESLT

4.12.1 Description

This Command is used to set audio sound gain value. For example, we can set speech sound gain value and turn on loop back test for testing audio loop back functionality. The reserved gain value 255 for error input check.

4.12.2 Direction and Format

APP->RMMI
Execution command : AT+ ESLT= <type>,<gain>
Test command : AT+ ESLT =? Show if the command is supported

4.12.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	type	Audio type	call tone	0
			keypad tone	1
			microphone	2
			<reserved>	3
			speech sound	4

			side tone	5
			MP3, Wave, melody, I-melody, midi	6
Integer	Gain	Gain value	0~254	

4.12.4 Response

Test command : + ESLT: (0-6),(0~254)
Execution command : OK

Example:
1. set speech sound gain value 150.
AT+ESLT = 4, 150

OK

4.13 AT+EALT

4.13.1 Description

This Command is used to turn on/off the loop back test as audio gain value setting in +ESLT.

4.13.2 Direction and Format

APP->RMMI
Execution command : AT+ EALT = <op>
Test command : AT+ EALT =? Show if the command is supported

4.13.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	opeartion	on	1
			off	0

4.13.4 Response

Test command : + EALT: (0,1)
Execution command : OK

4.14 AT+EGMR

4.14.1 Description

This Command is used to get the mobile revision for Engineer mode and factory test using. The set operation only apply for serial number used and IMEI.

4.14.2 Direction and Format

APP->RMMI
Execution command : AT+ EGMR = <op>,<type>[,str]
Test command : AT+ EGMR =? Show if the command is supported

4.14.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	opeartion	get	0
			set	1
integer	type	Revision type	Baseband chipset	0
			DSP code	1
			DSP patch	2
			MCU software	3
			MS board(hardware)	4
			Serial Number	5
			Melody revision	6
			IMEI	7
string	Str	Input/output string		

4.14.4 Response

Test command : + EGMR: (0,1)

Execution command : ［+EGMR: “str”]
OK

4.15 AT+ESIMS

4.15.1 Description

This Command is used to query SIM status .It will return the value to see if SIM is detected or not.

4.15.2 Direction and Format

APP->RMMI

Read command : AT+ ESIMS ? Show if the command is supported

4.15.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	opeartion	detected	1
			No SIM	0

4.15.4 Response

Read command : + ESIMS: (0/1)

4.16 AT+CASP

4.16.1 Description

This command handles the Audio Sound Play operation. We use this command to playback one exist audio ring sound. The sound id should refer to the existing ring sound number. You have to make sure the source ID is correct, otherwise it won't have any response.

4.16.2 Direction and Format

APP->RMMI

Execution command : AT+CASP = `<op>,<sound_id>[,<style> [, <timeout>] ]`

Read command : AT+CASP?

Test command : AT+CASP =? Show if the command is supported

4.16.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	2	Stop one audio ring sound
			1	Play one audio ring sound
Integer	id	Sound id		
integer	style	Play back style (When op= 1 required)	0	CRESCENDO
			1	INFINITE
			2	ONCE
			3	DESCENDO(NS)
Integer	Timeout	Timeout timer	1-25	SECONDs (no default value: if not given, it will keep playing)

4.16.4 Response

Read command : OK

Test command : +CASP: <op>,<sound_id>[,<style>,<timeout>]

Execution command : OK | ERROR | +CME ERROR: <err>

Example1:

at+casp=?
+CASP: <1-2>,<id>[,<0-3>[,<1-25>]]

OK
at+casp=1,151,0,3 (Stop after 3 seconds)
OK
at+casp=1,152,2 (Play once)
OK
at+casp=1,153,3,10 (Play 10 seconds)
OK
at+casp=1,5,1 (Keep on playing tone)
OK
at+casp=2,5 (Stop the tone)
OK

4.17 AT+ESLCD

4.17.1 Description

This command is used to set Main LCD contrast default value into NVRAM user data items. This command will provide a positive or negative offset for each level value.

4.17.2 Direction and Format

APP->RMMI

Execution command : AT+ ESLCD = <sign>,<value>

Test command : AT+ ESLCD=? Show if the command is supported

4.17.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	sign		negative	0
			positive	1
integer	value		0-254	

4.17.4 Response

Test command : + ESLCD: (0,1), (0-254)
OK

Execution command : OK

4.18 AT+ESHW

4.18.1 Description

This command is used to set PWM hardware default value.

4.18.2 Direction and Format

APP->RMMI

Execution command : AT+ ESPWM = <op>,<type>[,<value>s]

Test command : AT+ ESPWM=? Show if the command is supported

4.18.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	get	0
			(set	1
integer	type	type	PWM1	1
			PWM2	2
			Alter	3
			Main LCD contract value	4
			Sub LCD contract value	5
Integer	value	PWM value	When <op> =1, **TEN** <value>s is needed. <freq1>,<duty1>,<freq2>,<duty2>,<freq3>,<duty3>,<freq4>,<duty4><freq5>,<duty5>	

		Lcd contract value	When <op>=1, **Fifteen** <value>s is needed

4.18.4 Response

Test command : + ESPWM=(0,1),(1-5)
OK
Execution command : OK

Example:
at+eshw=0,1 /* get PWM1 default value */
(255,10),(255,25),(255,30),(255,45),(255,60)

OK
at+eshw=0,2 /* get PWM2 default value */
(255,20),(20000,40),(20001,60),(20000,80),(20000,100)

OK
at+eshw=0,3 /* get PWM3(Alter) default value */
(250,20),(250,40),(250,60),(250,80),(250,100)

OK
at+eshw=0,4 /* get Main LCD contract default value */
126,127,128,129,130,131,132,133,134,135,136,137,138,139,140

OK
at+eshw=0,5 /* get Sub LCD contract default value */
20,22,24,26,28,30,32,34,36,38,40,42,44,46,48

OK
/* get Main LCD contract default value */
at+eshw=1,4,126,127,128,129,130,131,132,133,134,135,136,137,138,139,140
OK
at+eshw=0,4
126,127,128,129,130,131,132,133,134,135,136,137,138,139,140
OK
/* set PWM1 contract default value */
at+eshw=1,1,250,20,250,40,250,60,250,80,250,100
OK
at+eshw=0,1
(250,20),(250,40),(250,60),(250,80),(250,100)
OK

4.19 AT+ESDP

4.19.1 Description

This Command is used to engineering mode with set MMI default profile set operation. We provide customer to customize the mobile before the time to the market. We support the change of wallpaper, ring tone, Home City,

Theme, and short cut selection as they want. The query command only query the valid range of each category not for query the current setting. The set operation only apply when reboot.

4.19.2 Direction and Format

APP->RMMI

Execution command : AT+ ESDP = <op>,<cat>,<param1>,<param2>,<param3>

Test command : AT+ ESDP =? Show if the command is supported

4.19.3 Field

Type	Short name	Long name	Parameter/comment		
Integer	op	operation	Query command	0	
			set	1	
			(Reserved)	2	
integer	cat	category	Wall paper	0	
			Ring tone	1	
			Home City	2	
			Theme	3	
			Select Short Cut	4	
integer	param1		Wall paper(default) Home City(default) Theme(default) Select Short Cut (default)	0	
			Ring tone(profile)	general	0
				meeting	1
				outdoor	2
				indoor	3
				headset	4
integer	param2		Wall paper (default) Home City (default) Theme (default) Select Short Cut (default)	0	
			Ring tone(type))	Power on	0
				(reserved)	1
Integer	param3		Wall paper(index)	1~15	
			Ring tone(index)	1~10	
			Home(index)	1~38	
			Theme(index)	1~7	
			Select Short Cut(index list)	“a. b. c. d. e. f. g. h. i .j”	

4.19.4 Response

Test command : + ESDP: <0-1>,<0-4>
OK

Execution command : +ESDP: <cat>,<param1>,<param2>,<param3>
OK

Example:

1. We want to query the wall paper set value

AT+ESDP = 0,0<CR>

+ESDP: 0, 0, 1-15
OK
we can set wall paper with index 5 using
AT+ESDP = 1, 0, 0, 0, 5
OK

2. we can set ring tone by using query first then set.

AT+ESDP = 0, 1<CR>

+ESDP: 0-4, 0 , 1-10
OK

(Then set ring tone 7 in general profile for power on type.)
AT+ESDP = 1, 1, 0, 0, 7
OK

3. Set Home City

AT+ESDP =0,2,0,0
+ESDP: 0, 0, (1-38)

OK
AT+ESDP =1,2,0,0,35
OK

4. Set Theme

AT+ESDP =0,3
+ESDP: 0, 0, (1-7)

OK
AT+ESDP =1,3,0,0,7
OK
AT+ESDP=1,3,0,0,5
OK

5. Set shortcut

AT+ESDP =0,4
+ESDP: 0, 0

OK
at+esdp=1,4,0,0,"1.2.3.4.5.6.7.8.9.10"
OK

4.20 AT+ELNVRM

4.20.1 Description

This Command is used to lock the operation of NVRAM for write protection .The temp disable operation apply for once.

The operation will not keep alive when power on again.

4.20.2 Direction and Format

APP->RMMI

Execution command : AT+ ELNVRM = <op>

Test command : AT+ ELNVRM =? Show if the command is supported

4.20.3 Field

Type	Short name	Long name	Parameter/comment	
Integer	op	operation	Lock enable	1

4.20.4 Response

Test command : + ELNVRM: <1>

Execution command : OK

5 MMI Test Items using MTK AT command

Here is an example of using AT command to test MMI function. Please be aware of that the AT command sent varies depending on the physical setting of tested target. For testing purpose, at the beginning of test sequence, tester must disable sleep mode first. The sleep mode disable command will not be valid after next power on.

The AT commands can be sent in mobile phone by UART connection. UART must be configured as baud rate 57600bps for MT6205B and 115200bps for MT6218B. Flow control as none or SW flow control if only Tx and Rx pins present and as HW flow control if modem control pins present.

The AT commands are sent to the PS port of mobile phone. The PS port setting can be configured in Engineering mode, which can be entered by pressing *#3646633# on the mobile phone. Default setting is UART 1.

5.1 A Sample of Test Procedure

Test KeyLight
Test Color_R Key Light
Test Color_G Key Light
Test Color_B Key Light

Test Speech

Test Vibrator

Test Keypad

Test Ringtone

Test LCD(R)
Test LCD(G)
Test LCD(B)

Test BackLight

5.2 A Sample of AT command test sequence:

AT command is sent by testing equipment, such at PC with terminal software.
The mobile pone will response to the AT command if the command is correct received and executed.

COM Monitoring
** Disable Sleep Mode**
SEND : AT+ESLP=0
RESPONSE : OK

** Test KeyLight **

SEND : AT+EPWM=2,0,2,50
RESPONSE : OK

SEND : AT+EPWM=3,0,0
RESPONSE : OK

SEND : AT+EGPIO=9, 1
RESPONSE : OK

SEND : AT+EPWM=2,2,12,100
RESPONSE : OK

SEND : AT+EPWM=3,2,0
RESPONSE : OK

SEND : AT+EGPIO=9, 0
RESPONSE : OK

SEND : AT+EGPIO=10, 1
RESPONSE : OK

SEND : AT+EPWM=2,2,12,100
RESPONSE : OK

SEND : AT+EPWM=3,2,0
RESPONSE : OK

SEND : AT+EGPIO=10, 0
RESPONSE : OK

SEND : AT+EGPIO=11, 1
RESPONSE : OK

SEND : AT+EPWM=2,2,12,100
RESPONSE : OK

SEND : AT+EPWM=3,2,0
RESPONSE : OK

SEND : AT+EGPIO=11, 0
RESPONSE : OK

Test Speech
SEND : AT+ESLT=2,200
RESPONSE : OK

SEND : AT+ESLT=4,200
RESPONSE : OK

SEND : AT+EALT=1
RESPONSE : OK

SEND : AT+EALT=0
RESPONSE : OK

Test Vibrator
SEND : AT+EGPIO=15,1
RESPONSE : OK

SEND : AT+EGPIO=15,0
RESPONSE : OK

** Test Keypad**

SEND : AT+EKPD=1
RESPONSE : OK

SEND : AT+EKPD=0
RESPONSE : OK

Test Ringtone
SEND : AT+CASP=1,152, 1
RESPONSE : OK

Test LCM(RGB)

SEND : AT+ELCM=0
RESPONSE : OK

SEND : AT+ELSM=0
RESPONSE : OK

SEND : AT+ELSM=1
RESPONSE : OK

SEND : AT+ELCM=1
RESPONSE : OK

SEND : AT+ELSM=0
RESPONSE : OK

SEND : AT+ELSM=1
RESPONSE : OK

SEND : AT+ELCM=2
RESPONSE : OK

SEND : AT+ELSM=0
RESPONSE : OK

SEND : AT+ELSM=1
RESPONSE : OK

SEND : AT+ELCM=4
RESPONSE : OK

**Test BackLight **

SEND : AT+EGPIO=8,1
RESPONSE : OK

SEND : AT+EPWM=2,1,1,50
RESPONSE : OK

SEND : AT+EPWM=3,1,0
RESPONSE : OK

Enable Sleep mode
SEND : AT+ESLP=1
RESPONSE : OK

5.3 Example : Write and Lock IMEI

Here we provide another example to show how IMEI can be written in and read out. NVRAM software lock can protect the IMEI from being over-written . It is an irreversible operation.

** Read Original IMEI **
SEND :AT+EGMR=0,7
RESPONSE :+EGMR: "135790246811220"

OK

** Write New IMEI **
SEND :AT+EGMR=1,7,"123412341234123"
RESPONSE :OK

** Read IMEI to verify if last write was successful **
SEND :AT+EGMR=0,7
RESPONSE :+EGMR: "123412341234123"

OK

** Lock NVRAM **
SEND :AT+ELNVRM=1
RESPONSE :OK

** Write IMEI again to verify the effect of lock **
SEND :AT+EGMR=1,7,"123456789012345"
RESPONSE :ERROR