MediaTek

如何順利開啓及校準 MT6140 的計畫

(Chinese Version)

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Preliminary (Released) Information

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Revision History

Revision	Date (yyyy/mm/dd)	Author	Comments
1.0	2007/10/17	CC Liao	First release for MT6140 (Chinese Version)
	2008/01/23	CC Huang	Add ASM control logic, and statement
	2008/6/23	Chuchuan Yen	Update L1, CFG, INI, PA settings and Tx design note

Table of Contents

1 RF Driver Check-In

這份文件可以幫忙您順利地檢查或者開啓使用 MT6140 的計畫.

1. **修改 make file.**
   Make file 中有以下三點需要更改或留意, 請仔細檢查：
   1. RF_MODULE = **[project_name]_MT6140D**
   2. AFC_VCXO_TYPE = **VCXO**
   3. COM_DEFS_FOR_**[project_name]_MT6140D = MT6140D_RF [project_name]_MT6140**

2. **增加 RF custom folder: [project_name]_MT6140D 在 \custom\l1_rf\ 下, 並放入以下兩個檔案:**

   \custom\l1_rf**[project_name]_MT6140D\l1d_custom_rf.h**
   \custom\l1_rf**[project_name]_MT6140D\m12193.c**

   範例檔案

l1d_custom_rf.h	M12193.c

   1. **l1d_custom_rf.h**
      請記得更改 #if !defined(**[project_name]_MT6140D**)
      並在相對應的 Baseband 區塊, 填入正確的 BPI Setting

      [ASM 的選擇] 在 l1d_custom_rf.h 中 請藉由移除 "//" 來選擇你要的 ASM
      Example:
      /*MT6140D*/ /*MT6229~*/ #define HM090FD_RF3159 /*DR */
      /*MT6140D*/ /*MT6229~*/ //#define MURA541_RF3159 /* TR */
      /*MT6140D*/ /*MT6229~*/ #define MURA465_RF3159 /* AR */ (若使用 RF3159)
      /*MT6140D*/ /*MT6229~*/ //#define MURA382_RF3159
      /*MT6140D*/ /*MT6229~*/ #define MURA465_SKY77344 （若使用 SKY77344）

      [ASM Control Logic 的連接] 請注意, Murata-382(quad-band ASM) 與 其他 ASM 的 BPI 順序有所不同.

```
/*MT6140D*/ #if  IS_EDGE_CHIP_MT6229_AND_LATTER_VERSION && (!IS_CHIP_MT6223)
/*MT6140D*/ /*MT6229~*/ /*-------------------------------------------------------------------*/
/*MT6140D*/ /*MT6229~*/ /*   define  BPI data for MT6140 (shall be modified by real case)   */
/*MT6140D*/ /*MT6229~*/ /*-------------------------------------------------------------------*/
/*MT6140D*/ /*MT6229~*/ /*    PRCB : bit   pin(MURATA 382)          pin (others)              */
/*MT6140D*/ /*MT6229~*/ /*           0   VDD                        VC2                     */
/*MT6140D*/ /*MT6229~*/ /*           1   VC3                        VC3                     */
/*MT6140D*/ /*MT6229~*/ /*           2   VC1                        VC1                     */
/*MT6140D*/ /*MT6229~*/ /*           3   VC2                        not used                */
/*MT6140D*/ /*MT6229~*/ /*           4   PAEN                       PAEN                    */
/*MT6140D*/ /*MT6229~*/ /*           5   DCS BANDSW                 DCS BANDSW              */
```

```
/*MT6140D*/ /*MT6229~*/ /*      6   not used                not used                */
/*MT6140D*/ /*MT6229~*/ /*      7   PA EDGE MODE            PA EDGE MODE            */
/*MT6140D*/ /*MT6229~*/ /*      8   not used                not used                */
/*MT6140D*/ /*MT6229~*/ /*      9   RFVCOEN                 RFVCOEN                 */
/*MT6140D*/ /*MT6229~*/ /*-------------------------------------------------------------------*/
```

[PA 的 timing] 請注意,不同 PA(RF3159; Sky77344) PT3 有所不同 :

/*MT6140D*/ #define QB_PT3 **25 (RF3159)**
/*MT6140D*/ #define QB_PT3 **30 (Sky77344)**

SKY77344 PAEN 延後關閉(至 30)的原因是爲了避免 conducted spurious from 500MHz~1.6GHz fail in GSM900 band

[Multislot 的 timing] 請注意,不同 PA(RF3159; Sky77344) PT2M1, PT2M2, PT2M3 有所不同 :

```
/*MT6140D*/ #define  QB_PT2M1_G8          4//(RF3159)
/*MT6140D*/ #define  QB_PT2M2_G8          3//( RF3159)
/*MT6140D*/ #define  QB_PT2M3_G8          2//( RF3159)
/*MT6140D*/ #define  QB_PT2M1_8G          11//( RF3159)
/*MT6140D*/ #define  QB_PT2M2_8G          10//( RF3159)
/*MT6140D*/ #define  QB_PT2M3_8G          9//( RF3159)
```

```
/*MT6140D*/ #define  QB_PT2M1_G8          6//(SKY77344)
/*MT6140D*/ #define  QB_PT2M2_G8          5//(SKY77344)
/*MT6140D*/ #define  QB_PT2M3_G8          4//(SKY77344)
/*MT6140D*/ #define  QB_PT2M1_8G          6//(SKY77344)
/*MT6140D*/ #define  QB_PT2M2_8G          5//(SKY77344)
/*MT6140D*/ #define  QB_PT2M3_8G          4//(SKY77344)
```

2. **m12193.c**
   請記得更改 #if !defined(**[project_name]_MT6140D**)

3. Support Software Version

1. **06B all branch**
2. **07A all branch**

4. [Caution] : 由於是回到 branch 來 support MT6140D, 請確認客戶的 load base 擁有下列 3 個 CR, 才是最新之 driver.

33919159	**MAUI_00364727**	**[L1D][Modify]** Add code to support MT6140D
33945071	**MAUI_00390639**	**[L1D][Modify]** Update MT6140D RF driver
33963602	**MAUI_00409170**	**[L1D][Modify]** Add PA Vbias control function for MT6140D

5. 請幫忙檢查 BB Chip 的 BPI / GPIO 的定義.

由於 RFVCOEN 爲 Transceiver RFVCO 的開關控制訊號, 不同 Base band Chip 與 RF chip 組合, RFVCOEN 所使用的 BPI 以及對應的 GPIO, 以及 mode 設定都不同, 請參考下表

B: 需設爲 BPI mode

G: 需設爲 GPIO mode

	MT6205	MT6129D	MT6139E
BPI_0		BPI	BPI
BPI_1		BPI	BPI
BPI_2		BPI	BPI
BPI_3		BPI	BPI
BPI_4	GPIO4 (PA_EN)	BPI	BPI
BPI_5	GPIO5(BANDSW_DCS)	BPI	BPI
BPI_6			
BPI_7	**GPIO7 (RFVCOEN)**	**GPIO**	**GPIO**
BPI_8	Not support		
BPI_9	Not support		

	MT6226/27	**MT6223**	**MT6225**	**MT6228/9**	**MT6235/38**	MT6129D	MT6139E	MT6140
BPI_0						BPI	BPI	BPI
BPI_1						BPI	BPI	BPI
BPI_2						BPI	BPI	BPI
BPI_3						BPI	BPI	BPI
BPI_4						BPI	BPI	BPI
BPI_5						BPI	BPI	BPI
BPI_6								
BPI_7				**GPIO17 (Mode_TRX)**	**GPIO21 (Mode_PA)**			**BPI**
BPI_8								
BPI_9	**GPIO13 (RFVCOEN)**	**GPIO23 (RFVCOEN)**	**GPIO28 (RFVCOEN)**	**GPIO19 (RFVCOEN)**	**GPIO23 (RFVCOEN)**	**GPIO**	**BPI**	**BPI**

Notice:

1. 因爲 MT6205 的 EVENT 不夠, 因此 RFVCOEN 無法設定爲 BPI mode ，只能設爲 GPIO mode
2. **MT6129:** 不論是用那一個 BB chip, 都請將此 GPIO (RFVCOEN) 均設爲 GPIO mode
3. **MT6139:** 若是 MT6205, 請將 GPIO7 (BPI_7) 設爲 gpio mode, 若是其它 BB chip, 請將此 GPIO(BPI_9) 設爲 BPI mode.
4. **MT6140: The setting is the same as MT6139, 另外請將 GPIO17(MT6229/30)或 GPIO21(MT6235/38)設成 BPI mode.**

底下爲檢查的方式:

A. 若 make file 中 **DRV_CUSTOM_TOOL_SUPPORT = FALSE,** 請檢查檔案 **\custom\drv\misc_drv\[project_name]_BB\gpio_drv.c**

1. 使用 MT6205 BB Chip, GPIO7(即爲 BPI_7) 設成 GPIO mode (set to 00)
2. 使用其他 BB Chip , GPIO(即爲 BPI_9) 設成 BPI mode (set to 01)

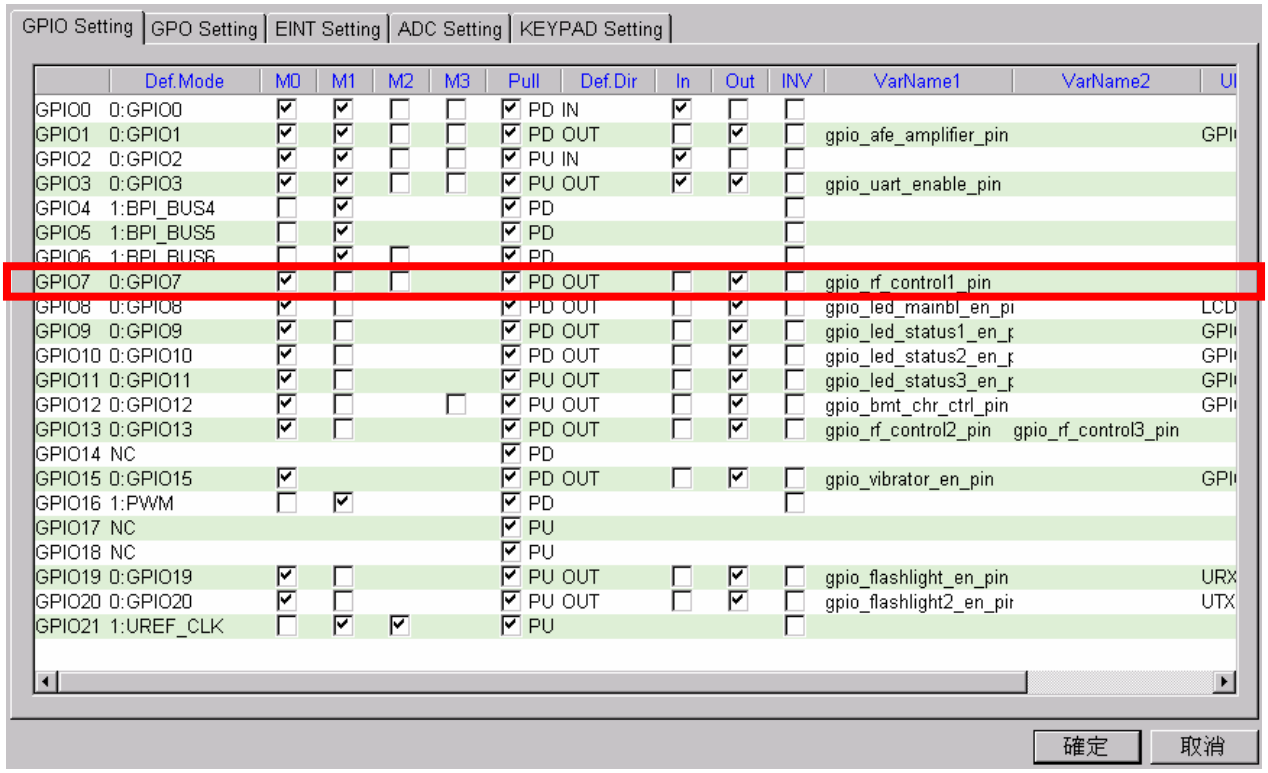
PS:使用此方法, 即便是 BPI 的設定錯也沒關係, 因爲這只是初使化; 之後 L1d 會強迫接手根據不同 BB 及 RF 組合設定 gpio mode or BPI mode ,

B. B) 若 make file 中 **DRV_CUSTOM_TOOL_SUPPORT = TRUE,** 請檢查檔案 **\custom\drv\misc_drv\[project_name]_BB\ codegen\codegen.dws**, 這個檔案要使用 custom\drv\Drv_Tool\DrvGen.exe 去編輯, 編輯後執行 code gen 會 產生 \custom\drv\misc_drv\XXX_BB\codegen\gpio_drv.h

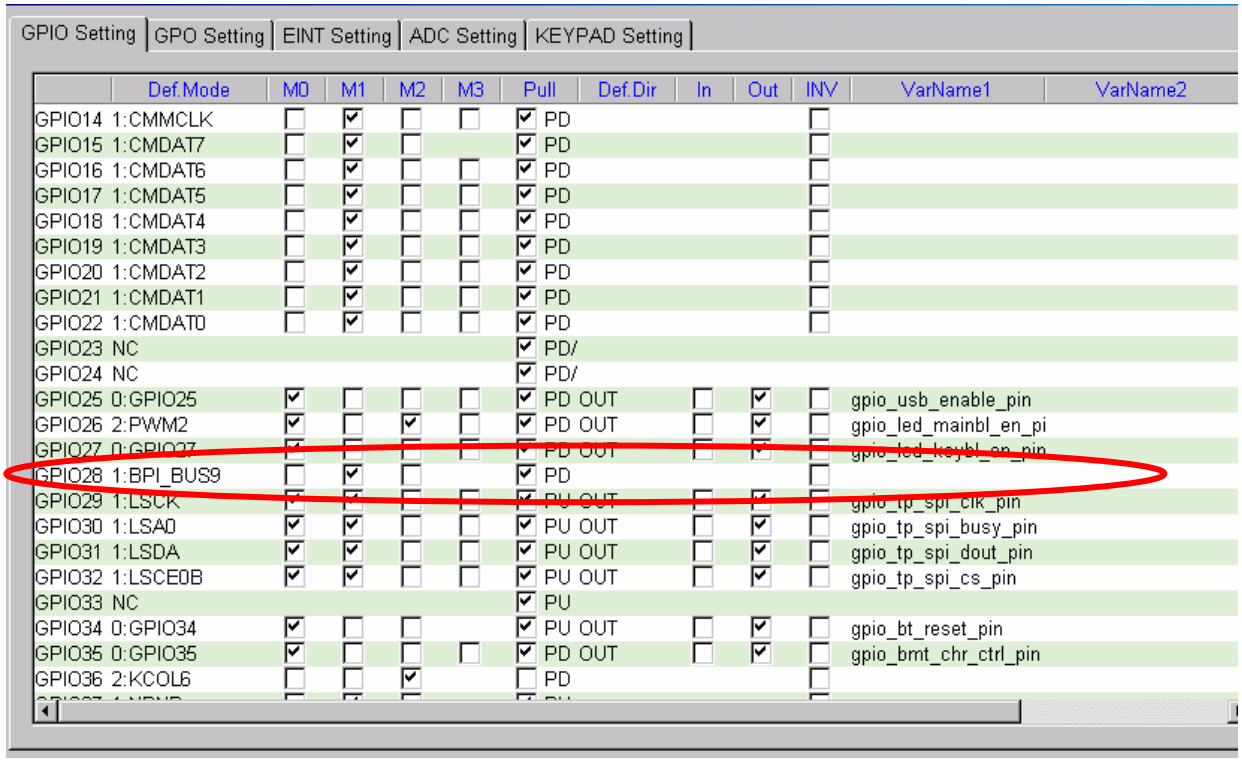
1. 使用 MT6205 BB Chip, GPIO7(即爲 BPI_7) 設成 GPIO mode (M0), 其後面的 VarName1 也要設爲 gpio_rf_control_pin
2. 使用其他 BB Chip , GPIO(即爲 BPI_9) 設成 BPI mode (M1)

PS: 若使用此方式, 一定要根據不同 BB+RF 的組合, check codegen.dws 這支檔案 BPI_7/ BPI_9 是否設對, 因爲 L1d 不會強迫接手; 若設定錯誤會有找不到網的問題發生

EX1: 以 MT6205+MT6139 爲例 , GPIO7 設爲 GPIO mode (M0), VarName1 設爲 gpio_rf_control_pin



EX2: 以 MT6225+MT6139 爲例:, GPIO28 設爲 BPI_BUS9，且設爲 BPI mode (M1)



	Def.Mode	M0	M1	M2	M3	Pull	Def.Dir	In	Out	INV	VarName1	VarName2
GPIO14	1:CMMCLK	☐	☑	☐	☐	☑	PD			☐		
GPIO15	1:CMDAT7	☐	☑	☐		☑	PD			☐		
GPIO16	1:CMDAT6	☐	☑	☐	☐	☑	PD			☐		
GPIO17	1:CMDAT5	☐	☑	☐	☐	☑	PD			☐		
GPIO18	1:CMDAT4	☐	☑	☐	☐	☑	PD			☐		
GPIO19	1:CMDAT3	☐	☑	☐	☐	☑	PD			☐		
GPIO20	1:CMDAT2	☐	☑	☐	☐	☑	PD			☐		
GPIO21	1:CMDAT1	☐	☑	☐	☐	☑	PD			☐		
GPIO22	1:CMDAT0	☐	☑	☐	☐	☑	PD			☐		
GPIO23	NC					☑	PD/					
GPIO24	NC					☑	PD/					
GPIO25	0:GPIO25	☑	☐	☐	☐	☑	PD OUT	☐	☑	☐	gpio_usb_enable_pin	
GPIO26	2:PWM2	☑	☐	☑	☐	☑	PD OUT	☐	☑	☐	gpio_led_mainbl_en_pi	
GPIO27	0:GPIO27	☑	☐	☐	☐	☑	PD OUT	☐	☑	☐	gpio_led_keybl_en_pin	
GPIO28	1:BPI_BUS9	☐	☑	☐		☑	PD			☐		
GPIO29	1:LSCK	☑	☑	☐	☐	☑	PU OUT	☐	☑	☐	gpio_tp_spi_clk_pin	
GPIO30	1:LSA0	☑	☑	☐	☐	☑	PU OUT	☐	☑	☐	gpio_tp_spi_busy_pin	
GPIO31	1:LSDA	☑	☑	☐	☐	☑	PU OUT	☐	☑	☐	gpio_tp_spi_dout_pin	
GPIO32	1:LSCE0B	☑	☑	☐	☐	☑	PU OUT	☐	☑	☐	gpio_tp_spi_cs_pin	
GPIO33	NC					☑	PU					
GPIO34	0:GPIO34	☑	☐	☐		☑	PU OUT	☐	☑	☐	gpio_bt_reset_pin	
GPIO35	0:GPIO35	☑	☐	☐	☐	☑	PD OUT	☐	☑	☐	gpio_bmt_chr_ctrl_pin	
GPIO36	2:KCOL6	☐	☐	☑		☐	PD			☐		

2 RF Calibration Using META Tool

MT6140 是 crystal solution 的 transceiver. 爲使 MT6140 能正確的完成 AFC Function 並確保其特性, 請記得在手機出廠前執行相關的校準, 校準步驟詳述如下. 詳細的校準流程請參考 META application note.

MT6140 校準(RF related)包含四個部份 (其中 AFC 和 TX IQ 爲 MT6140 所新增):

- **AFC (contains CAP_ID, AFC slope and offset, and TRX offset calibration)**
- **RX Path Loss**
- **TX IQ ➔ Using 8PSK mode, high band and low band calibration**
- **TX PCL ➔ GSMK and 8PSK calibration**

1. **確定 META 版本**
   請使用 **META v5.0828.0** 以上的版本.

2. **接上 cable, 並依照 META 進入程序, 進入 Factory Mode.**
   META 進入程序如下:
   - **Select COM port.**
   - **Select baseband chip from META main selection menu Option ➔ Baseband chip (if user doesn't know which baseband chip used, user can select auto detect).**
   - **Select external clock rate from META main selection menu Option ➔ External clock (if user doesn't know which external clock used, he can select auto detect).**
   - **Select baud rate from META main selection menu baudrate ComboBox (if user doesn't know which baudrate used, he can select auto).**
   - **Power on mobile.**
3. **根據使用軟件版本, 給予正確的 NVRAM database.**
   如 : BPLGUInfoCustom_MT6226M_S01_MAUI_05C_W06_20
   NVRAM Database 版本必需與 download 到手機 bin file 版本一致.
4. **指定 configuration file (.cfg). 參數的描述可以參考 META application note.**

RF3159 使用的 CFG 檔 MT6140_RF3159.cfg

SKY77344 使用的 CFG 檔 MT6140_SKY7344.cfg

請檢查 .cfg file 應該包含以下參數:

AFC Calibration 相關

[AFC Calibration]
;AFC_BAND: GSM, DCS, PCS, GSM850
AFC_BAND = GSM
AFC_ARFCN = 65
N_AFC = 10
DAC1 = 4000
DAC2 = 5000
CRYSTAL_DAC1 = 3800
CRYSTAL_DAC2 = 4200

[Crystal AFC Calibration]
;CRYSTAL_AFC_BAND: GSM, DCS, PCS, GSM850
CRYSTAL_AFC_BAND = GSM
CRYSTAL_AFC_ARFCN = 65
CRYSTAL_AFC_GSM850_PCL = 12
CRYSTAL_AFC_GSM900_PCL = 12
CRYSTAL_AFC_DCS1800_PCL = 7
CRYSTAL_AFC_PCS1900_PCL = 7
CRYSTAL_AFC_CAL_DAC = 4096
CRYSTAL_AFC_CHECK_DAC1 = 0
CRYSTAL_AFC_CHECK_DAC2 = 8191
CRYSTAL_AFC_MIN_FREQ_ERR_PPM = -15.0
CRYSTAL_AFC_MAX_FREQ_ERR_PPM = 15.0
CRYSTAL_AFC_MAX_AFC_TRACK_INIT_FREQ_ERR = 50.0
CRYSTAL_AFC_FREQ_ERR_MEASUSE_COUNT = 10
CRYSTAL_AFC_TRX_OFFSET_RECURSIVE_TIMES = 20

[AFC table]
MAX_INIT_AFC_DAC = 7000
MIN_INIT_AFC_DAC = 2000
MAX_AFC_SLOPE = 10.0
MIN_AFC_SLOPE =1.0

RX Path Loss 相關

[RX path loss table]
GSM850_MAX_RX_LOSS = 3.000,3.000,3.000,3.000,3.000,3.000,3.000,3.000,3.000,3.000,3.000,3.000,3.0000,
GSM850_MIN_RX_LOSS = -3.000,-3.000,-3.000,-3.000,-3.000,-3.000,-3.000,-3.000,-3.000,-3.000,-3.000,-3.0000,

GSM900_MAX_RX_LOSS = 5.000,5.000,5.000,5.000,5.000,5.000,5.000,5.000,5.000,5.000,5.000,5.000,5.0000,
GSM900_MIN_RX_LOSS = -5.000,-5.000,-5.000,-5.000,-5.000,-5.000,-5.000,-5.000,-5.000,-5.000,-5.000,-5.0000,

DCS1800_MAX_RX_LOSS = 5.000,5.000,5.000,5.000,5.000,5.000,5.000,5.000,5.000,5.000,5.000,5.000,5.0000,
DCS1800_MIN_RX_LOSS = -5.000,-5.000,-5.000,-5.000,-5.000,-5.000,-5.000,-5.000,-5.000,-5.000,-5.000,-5.0000,

PCS1900_MAX_RX_LOSS = 6.000,6.000,6.000,6.000,6.000,6.000,6.000,6.000,6.000,6.000,6.000,6.000,6.0000,
PCS1900_MIN_RX_LOSS = -6.000,-6.000,-6.000,-6.000,-6.000,-6.000,-6.000,-6.000,-6.000,-6.000,-6.000,-6.0000,

[TX IQ table]
TX_IQ_MEASUREMENT_COUNT = 20
;TX_IQ_BAND: GSM, DCS, PCS, GSM850
TX_IQ_BAND = GSM
TX_IQ_ARFCN = 65
TX_IQ_PCL = 15
TX_IQ_DC_OFFSET_MAX = -38
TX_IQ_GAIN_IMBALANCE_MAX = -35
; The following setting is for MT6140B
TX_IQ_BAND_HIGH = DCS
TX_IQ_ARFCN_HIGH = 700
TX_IQ_PCL_HIGH = 5
TX_IQ_DC_OFFSET_MAX_HIGH = -38
TX_IQ_GAIN_IMBALANCE_MAX_HIGH = -35

TX PCL 相關

[TX PCL table]

GSM850_CAL_PCL = 17, 12, 5,
GSM850_2CAL_PCL = 19, 5,
GSM850_PCL = 19,18,17,16,15,14,13,12,11,10,9,8,7,6,5,
GSM850_CHECK_PCL = 19,18,17,16,15,14,13,12,11,10,9,8,7,6,5,
GSM850_MAX_P = 6, 8, 10,12,13.8,15.8,17.8,19.8,21.8,23.8,25.8,27.8,29.5,31,32.8,
GSM850_WANTED_P = 5.2,7,9,11,13,15,17,19,21,23,25,27,29,30.5,32.2,
GSM850_MIN_P = 4,6,8,10,12.5,14.5,16.5,18.5,20.5,22.5,24.5,26.5,28.5,30,31.7
GSM850_C = **2,3,4,5,8,10,15,15,15,15,20,20,25,25,30,30,**
GSM850_CORRECTION = 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,

GSM850_EPSK_CAL_PCL = 12, 10, 6,
GSM850_EPSK_2CAL_PCL = 19, 5,
GSM850_EPSK_4CAL_PCL = 19,14,12,8,
GSM850_EPSK_PCL = 19,18,17,16,15,14,13,12,11,10,9,8,7,6,5,
GSM850_EPSK_CHECK_PCL = 19,18,17,16,15,14,13,12,11,10,9,8,7,6,5,
GSM850_EPSK_MAX_P = 5.5, 7.5, 9.5,11.5,13.5,15.5,17.5,19.5,21.5,23.5,25.5,27.5,27.5,27.5,27.5,
GSM850_EPSK_WANTED_P = 5.2,7,9,11,13,15,17,19,21,23,25,26.5,26.5,26.5,26.5,
GSM850_EPSK_MIN_P = 4.5,6.5,8.5,10.5,12.5,14.5,16.5,18.5,20.5,22.5,24.5,26.3,26.3,26.3,26.3,
GSM850_EPSK_C = **5,5,5,7,7,7,7,7,7,7,7,7,7,7,7,**
GSM850_EPSK_CORRECTION = 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,

GSM900_CAL_PCL = 17, 12, 5,
GSM900_2CAL_PCL = 19, 5,
GSM900_PCL = 19,18,17,16,15,14,13,12,11,10,9,8,7,6,5,
GSM900_CHECK_PCL = 19,18,17,16,15,14,13,12,11,10,9,8,7,6,5,
GSM900_MAX_P = 6.3, 8, 10,12,13.8,15.8,17.8,19.8,21.8,23.8,25.8,27.8,29.5,31,32.8,
GSM900_WANTED_P = 5,7,9,11,13,15,17,19,21,23,25,27,29,30.5,32.2,
GSM900_MIN_P = 4,6,8,10,12.5,14.5,16.5,18.5,20.5,22.5,24.5,26.5,28.5,30,31.7
GSM900_C = **2,3,4,5,8,10,15,15,15,15,20,20,25,25,30,30,**
GSM900_CORRECTION = 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,

GSM900_EPSK_CAL_PCL = 12, 10, 6,
GSM900_EPSK_2CAL_PCL = 19, 5,
GSM900_EPSK_4CAL_PCL = 19,14,12,8,
GSM900_EPSK_PCL = 19,18,17,16,15,14,13,12,11,10,9,8,7,6,5,
GSM900_EPSK_CHECK_PCL = 19,18,17,16,15,14,13,12,11,10,9,8,7,6,5,
GSM900_EPSK_MAX_P = 5.5, 7.5, 9.5,11.5,13.5,15.5,17.5,19.5,21.5,23.5,25.5,27.5,27.5,27.5,27.5,
GSM900_EPSK_WANTED_P = 5,7,9,11,13,15,17,19,21,23,25,26.5,26.5,26.5,26.5,
GSM900_EPSK_MIN_P = 4.5,6.5,8.5,10.5,12.5,14.5,16.5,18.5,20.5,22.5,24.5,26.3,26.3,26.3,26.3,
GSM900_EPSK_C = **5,5,5,7,7,7,7,7,7,7,7,7,7,7,7,**
GSM900_EPSK_CORRECTION = 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,

DCS1800_CAL_PCL = 13, 8, 1,
DCS1800_2CAL_PCL = 15, 0,
DCS1800_PCL = 15,14,13,12,11,10, 9, 8, 7, 6, 5,4,3,2,1,0,
DCS1800_CHECK_PCL = 15,14,13,12,11,10, 9, 8, 7, 6, 5,4,3,2,1,0,
DCS1800_MAX_P = 2, 3.5, 5,7,9,11,12.5,14.5,16.5,18.5,20.5,22.5,24.5,26.5,28,31,
DCS1800_WANTED_P = 1.2,2.5,4.3,6.2,8,10,12,14,16,18,20,22,24,26,27.5,29.2,
DCS1800_MIN_P = -0.5,1.5,3.5,5,7,9,11.5,13.5,15.5,17.5,19.5,21.5,23.5,25,27,28.7,
DCS1800_C = **2,2,3,3,4,4,5,5,8,8,15,15,20,20,25,25,**

DCS1800_CORRECTION = 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,

DCS1800_EPSK_CAL_PCL = 8, 6, 2,
DCS1800_EPSK_2CAL_PCL = 15, 0,
DCS1800_EPSK_4CAL_PCL = 15,8,6,2,
DCS1800_EPSK_PCL = 15,14,13,12,11,10, 9, 8, 7, 6, 5,4,3,2,1,0,
DCS1800_EPSK_CHECK_PCL = 15,14,13,12,11,10, 9, 8, 7, 6, 5,4,3,2,1,0,
DCS1800_EPSK_MAX_P = 0.5, 2.5, 4.5,6.5,8.5,10.5,12.5,14.5,16.5,18.5,20.5,22.5,24.5,26.5,26.5,26.5,
DCS1800_EPSK_WANTED_P = 0,2,4,6,8,10,12,14,16,18,20,22,24,25.5,25.5,25.5,
DCS1800_EPSK_MIN_P = -0.5,1.5,3.5,5,7,9,11.5,13.5,15.5,17.5,19.5,21.5,23.5,25.3,25.3,25.3,
DCS1800_EPSK_C = **5,5,5,7,7,7,7,7,7,7,7,7,7,7,7,7,**
DCS1800_EPSK_CORRECTION = 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,

PCS1900_CAL_PCL = 13, 8, 1,
PCS1900_2CAL_PCL = 15, 0,
PCS1900_PCL = 15,14,13,12,11,10, 9, 8, 7, 6, 5,4,3,2,1,0,
PCS1900_CHECK_PCL = 15,14,13,12,11,10, 9, 8, 7, 6, 5,4,3,2,1,0,
PCS1900_MAX_P = 2, 3.5, 5,7,9,11,12.5,14.5,16.5,18.5,20.5,22.5,24.5,26.5,28,31,
PCS1900_WANTED_P = 1.2,2.5,4.3,6.2,8,10,12,14,16,18,20,22,24,26,27.5,29.0,
PCS1900_MIN_P = -0.5,1.5,3.5,5,7,9,11.5,13.5,15.5,17.5,19.5,21.5,23.5,25,26.7,28.5,
PCS1900_C = **2,2,3,3,4,4,5,5,8,8,15,15,20,20,25,25,**
PCS1900_CORRECTION = 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,

PCS1900_EPSK_CAL_PCL = 8, 6, 2,
PCS1900_EPSK_2CAL_PCL = 15, 0,
PCS1900_EPSK_4CAL_PCL = 15,8,6,2,
PCS1900_EPSK_PCL = 15,14,13,12,11,10, 9, 8, 7, 6, 5,4,3,2,1,0,
PCS1900_EPSK_CHECK_PCL = 15,14,13,12,11,10, 9, 8, 7, 6, 5,4,3,2,1,0,
PCS1900_EPSK_MAX_P = 0.5, 2.5, 4.5,6.5,8.5,10.5,12.5,14.5,16.5,18.5,20.5,22.5,24.5,26.5,26.5,26.5,
PCS1900_EPSK_WANTED_P = 0,2,4,6,8,10,12,14,16,18,20,22,24,25.5,25.5,25.5,
PCS1900_EPSK_MIN_P = -0.5,1.5,3.5,5,7,9,11.5,13.5,15.5,17.5,19.5,21.5,23.5,25.3,25.3,25.3,
PCS1900_EPSK_C = **5,5,5,7,7,7,7,7,7,7,7,7,7,7,7,7,**
PCS1900_EPSK_CORRECTION = 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,

TSC=5
Recursive Times=10
APC Delta=0.1

5. **指定 initial file (.ini).**

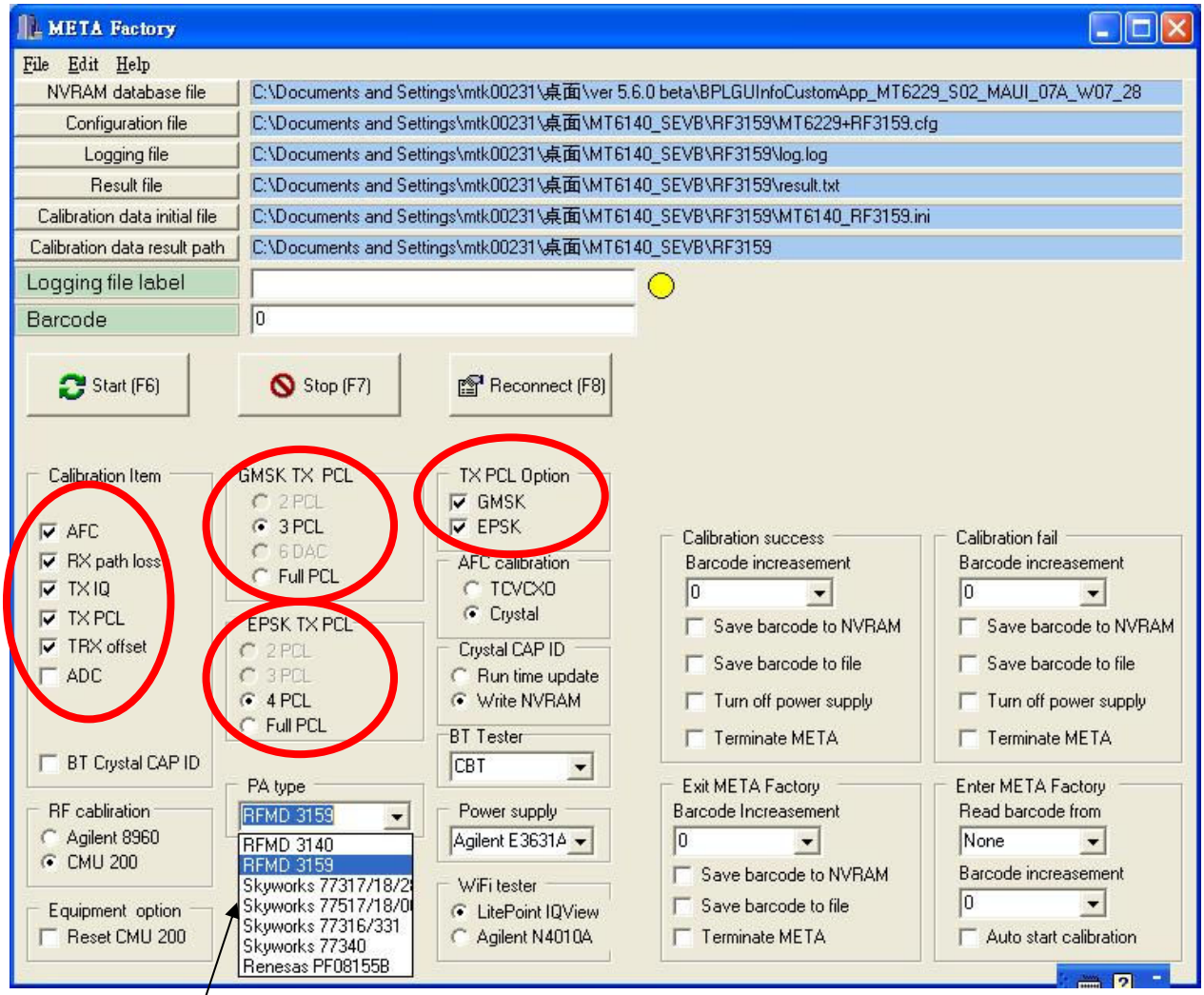
MT6229+RF3159 MT6140_RF3159.ini

MT6229+Sky77344 MT6140_SKY77344.ini

6. **指定相關 log and result files.**

7. **請檢查下面紅色圈圈所圈的選項是否有勾起**
包含: AFC, RX path loss, TX IQ, TX PCL, Crystal, **TRX offset cal.**

8. 按 Start.

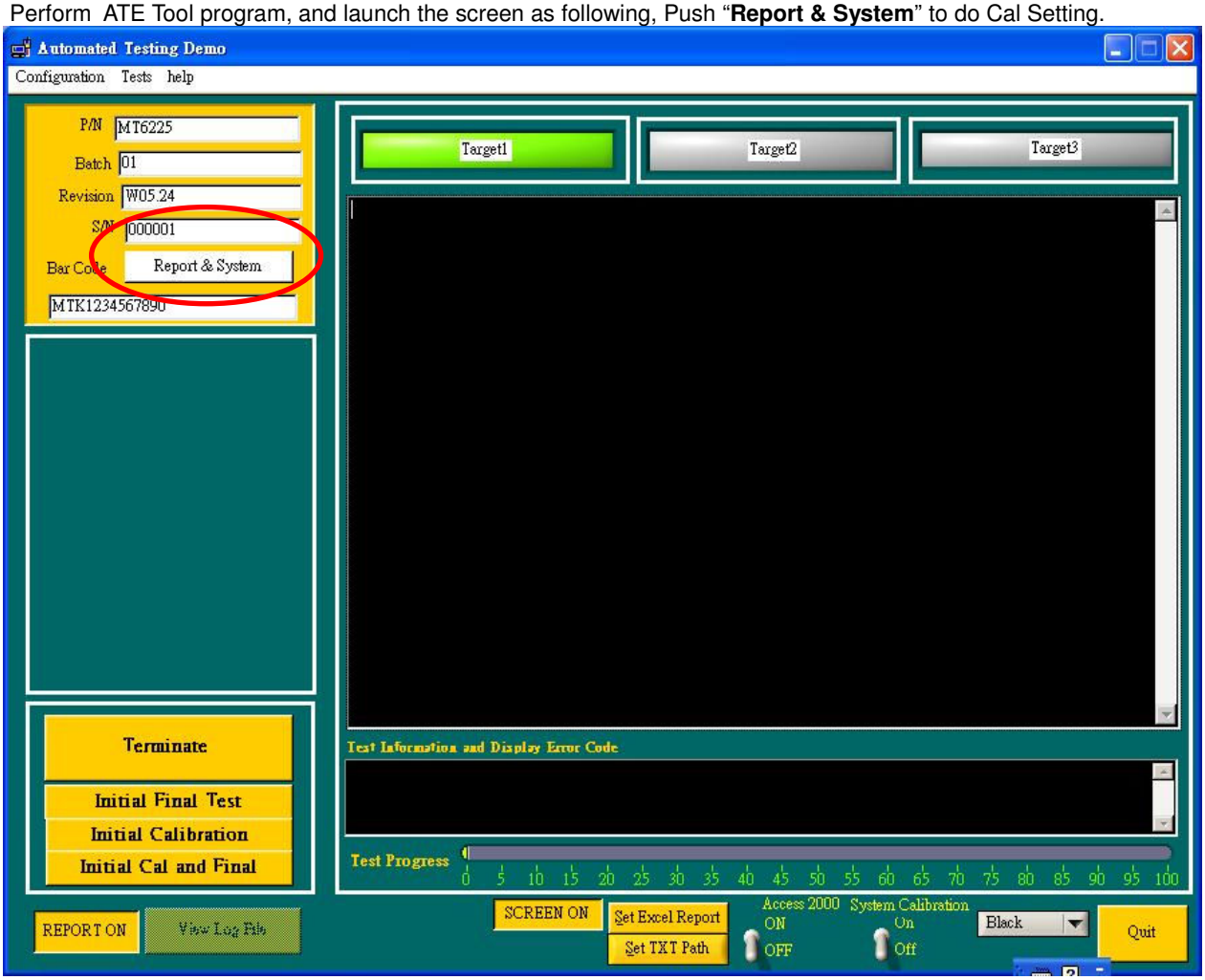


Choose "RFMD 3159" for MT6140+RF3159 calibration
Choose "Skyworks 77344" for MT6140+SKY77344

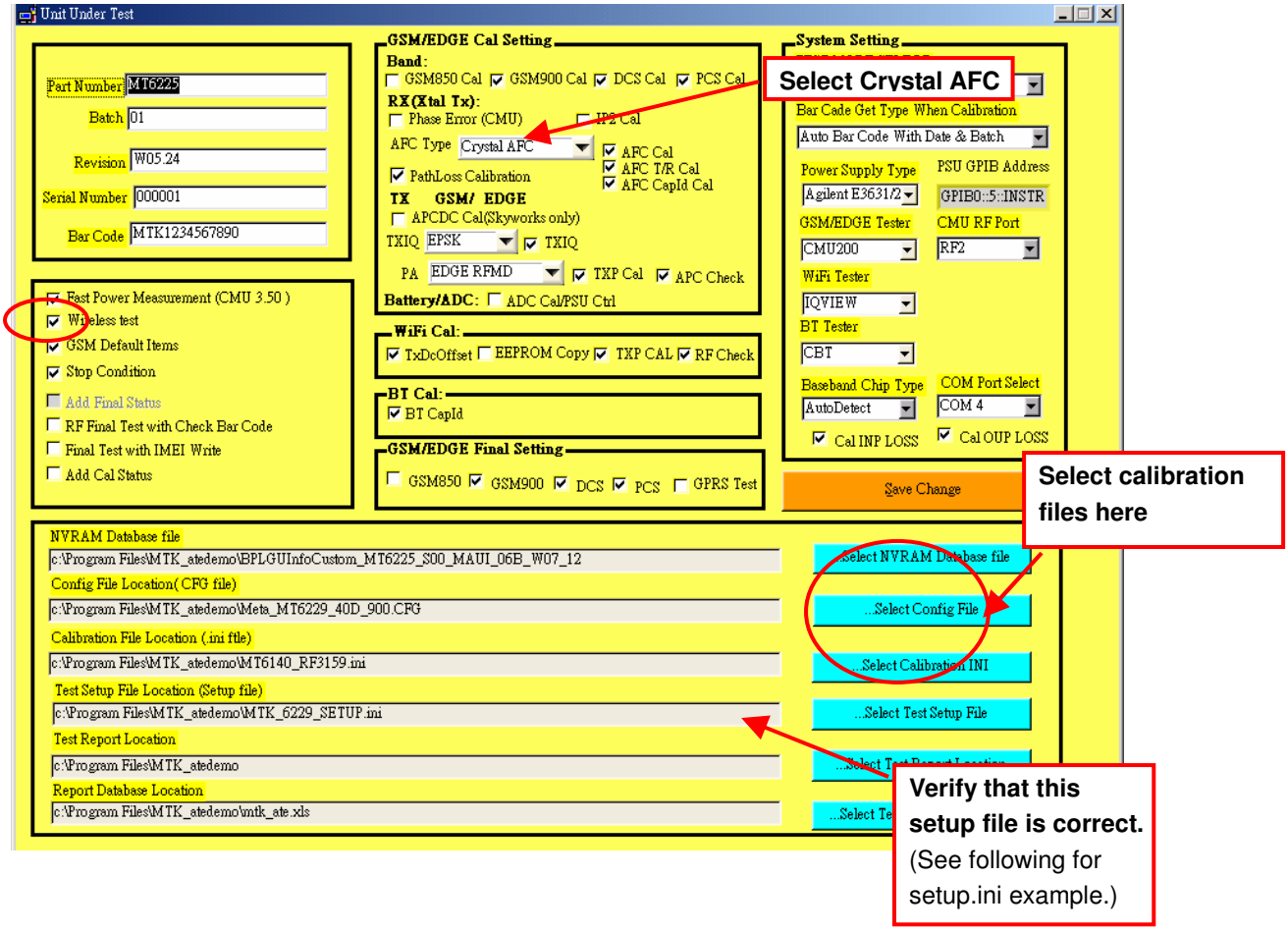
3 RF Calibration Using ATE Tool

When you use ATE Tool to perform calibration and final test, please note the following steps
please use the version of ATE V5.0752.2
please use the ATE document for details

1. Perform ATE Tool program, and launch the screen as following, Push "**Report & System**" to do Cal Setting.



2. Specify the NVRAM database file, .cfg file, .ini file and setup file.



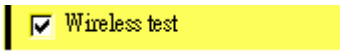
3.Wireless test only used during CMU final test

If toggle “Wireless test” check box and the loss setting like the following example in the C:\Program Files\MTK_atedemoMTK_6229_SETUP.ini

The CMU200 and Agilent8960 loss setting

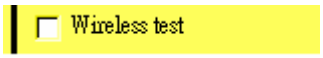
a. CMU loss setting 1 for final test

User can set different loss with each test channel

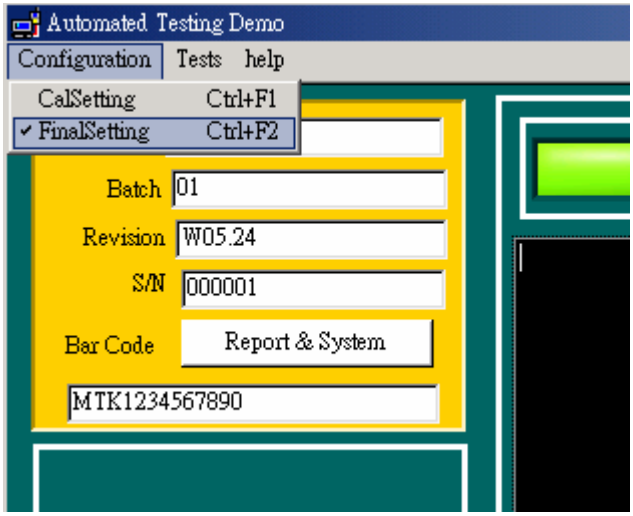


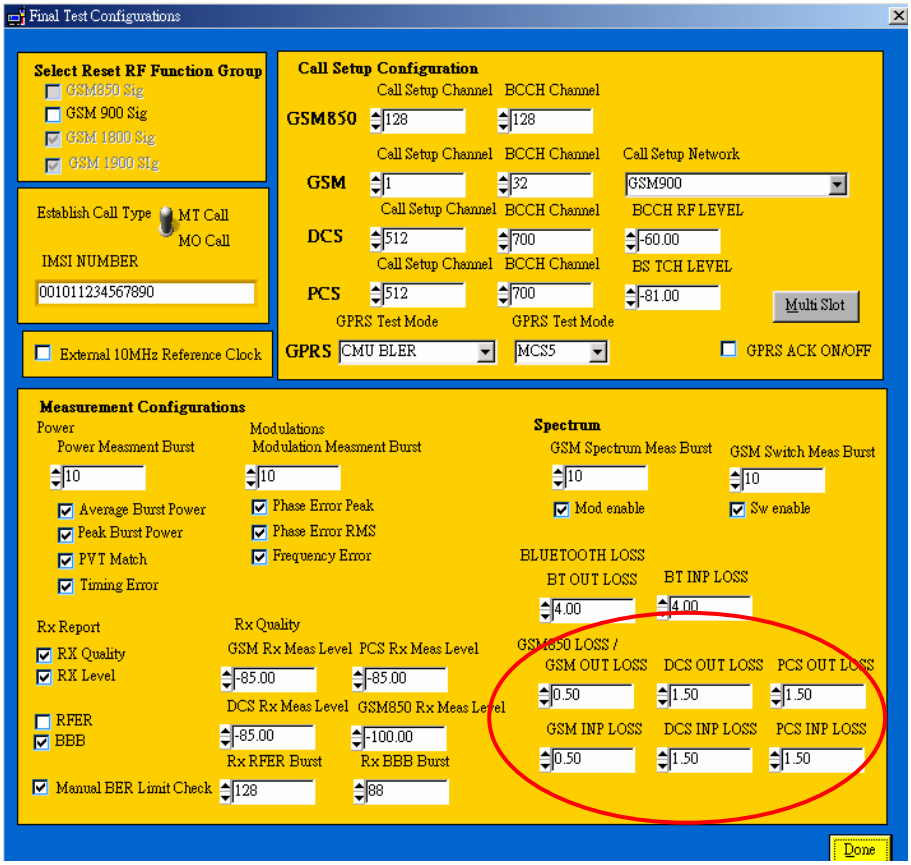
[GSM 1]
Active = 1
TCH = 975
PCL = 7
Output Loss = 0.5 ----------→ CMU final test loss setting
Input Loss = 0.5

b. CMU loss setting 2 for final test



User can select the following selection panel to set loss





c. CMU200 loss setting 3 for calibration

[Calibration Setup]

GSMN OUT LOSS = 0.8 ----------This setting is used for CMU calibration loss setting
GSMN INP LOSS = 0.8
DCSN OUT LOSS = 1
DCSN INP LOSS = 1
PCSN OUT LOSS = 1.2 ----------This setting is used for CMU calibration loss setting
PCSN INP LOSS = 1.2

d. Agilent 8960 loss setting 1 for calibration and final test

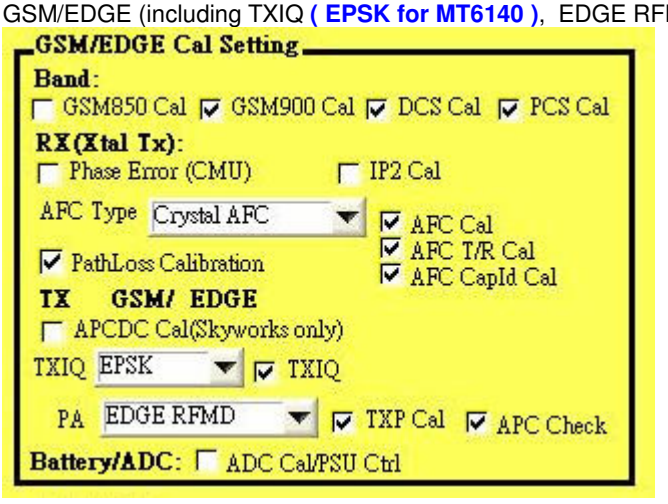
[Final Test TX Check] section in the C:\Program Files\MTK_atedemoMTK_6229_SETUP.ini ,and user can define Agilent 8960 loss setting as following:

AG8960_RF_Amptd_Freq_Offset Line0001 = "500000000,641000000,641100000,876000000,876100000,1312000000,1312100000,18800000"
AG8960_RF_Amptd_Freq_Offset Line0002 = "00,1881000000,1882000000,1883000000,1884000000,1885000000,2000000000,-1,-1,-1,-1"
AG8960_RF_Amptd_Freq_Offset Line0003 = ",-1,-1,"
AG8960_RF_Amptd_Value_Offset Line0001 = "-0.5,-0.5,-0.5,-0.5,-0.5,-0.5,-0.7,-0.7,-0.8,-0.8,-0.7,-0.7,-0.8,-0.8,-0.8,-0.8,"
AG8960_RF_Amptd_Value_Offset Line0002 = "-0.8,-0.8,-0.8,-0.8,"
Using Freq Amptd Offset = 1 ----------→The setting as 1, and use the above table setting

e.Agilent 8960 setting 2 for calibration and final test

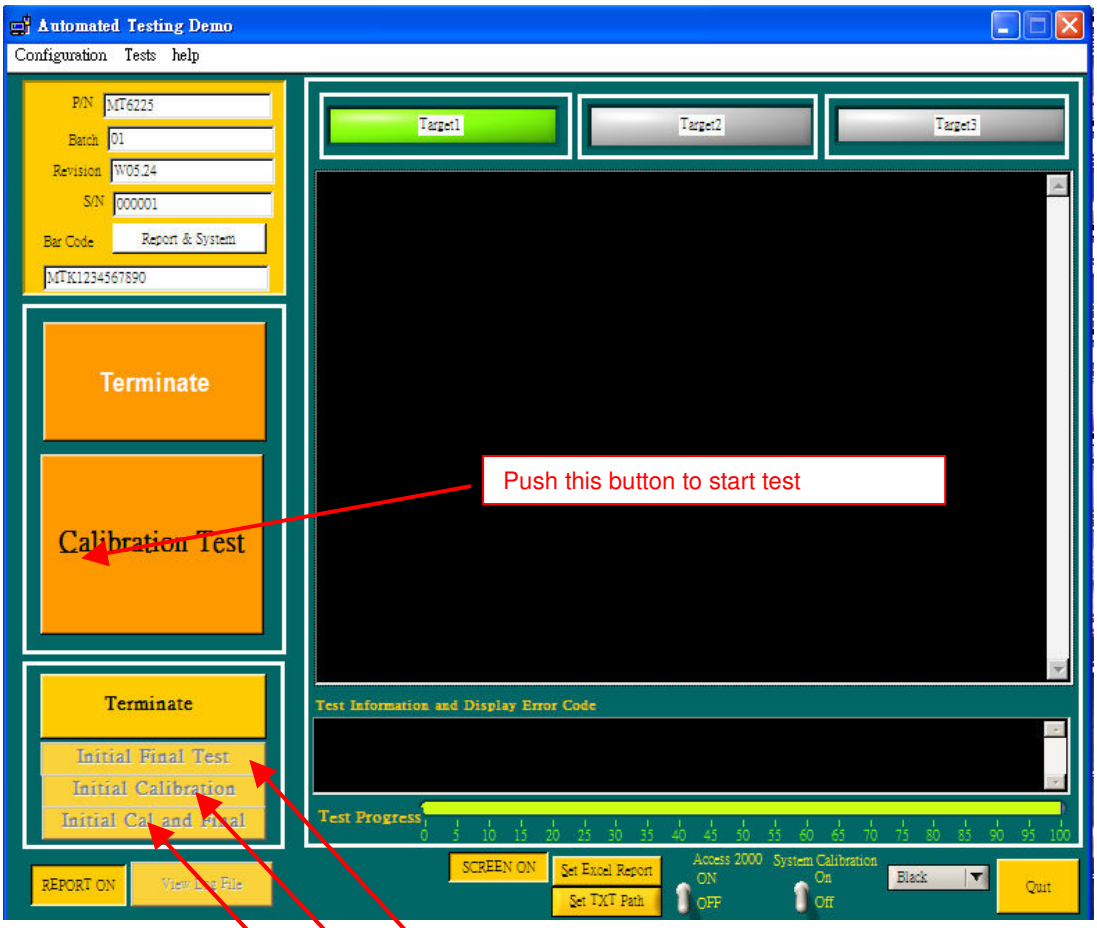
Using Freq Amptd Offset = 0 ----------→ **The settinglike b. CMU loss setting 2**

4. **For GSM/EDGE Cal Setting Items.**
   Including: Band(select the max measurement band), RX(including AFC Cal and Path Loss Calibration), TX GSM/EDGE (including TXIQ **(EPSK for MT6140)**, EDGE RFMD or different PA PCLcalibration, APC Check).



5. **User can push "save change" to save into setup file.**

6. Start to test with normal mode for final test and META mode for calibration test



4 RF Final test Using ATE Tool

If final test must be tested EDGE RF performance ,User must be modify Customer_setup.txt file.
Path： C:\program Files\MTK_atedemo

[Test System]
GSM System = 0 ➔ 若只測 GSM 則設爲 1，測 EDGE 設爲 0
Bluetooth System = 0
EMBT Enable = 3
EMBT Write BD Address = 0
WLAN System = 0
WLAN RX Test = 0
WLAN TX Test = 0
EDGE System = 1 ➔若只測 GSM 則設爲 0，測 EDGE 設爲 1
Network Auto Search = 1
Tester TCPIP = N4010A_1
Security File = "c:\\Program Files\\MTK_atedemo\\TEST_AUTH_MTK_6229E4.auth"
WiFi Module = 0
GSM Only = 0
EDGE PCCARD = 0