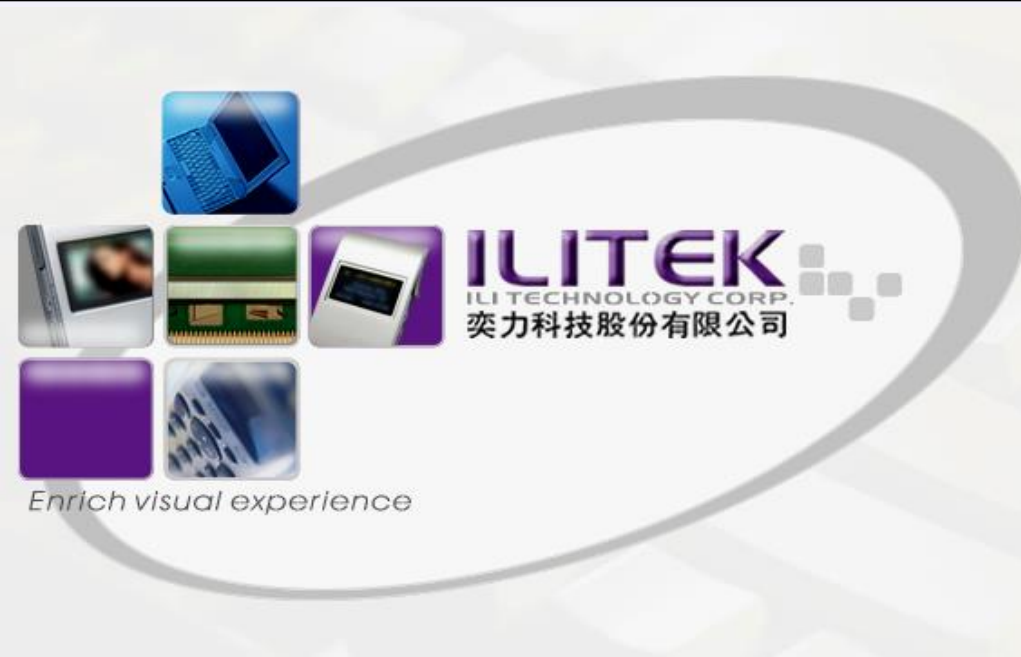


# Tuning Tool 基本調適



*SH FAE*  
*2017/04*

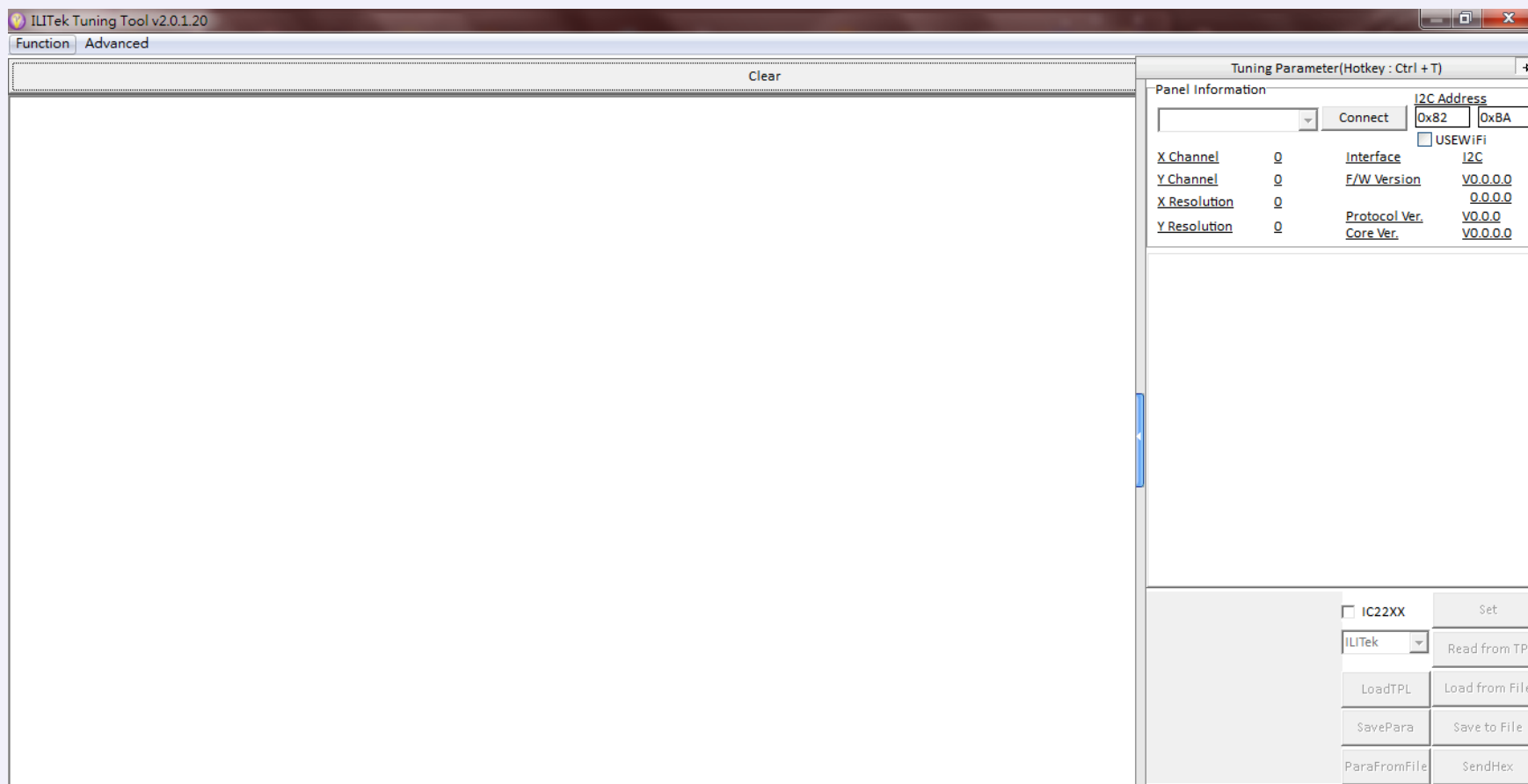
# Tuning Tool

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- ❖ 做基礎畫線功能調適
- ❖ 調適後的參數可以保留以方便遠端確認



Tuning Guide



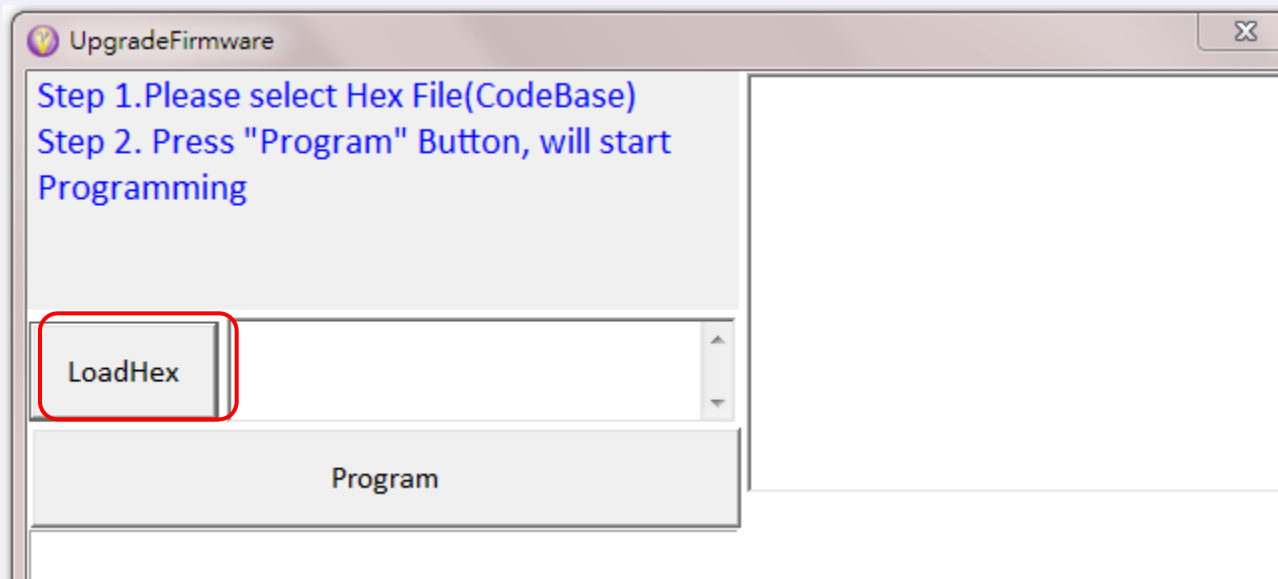
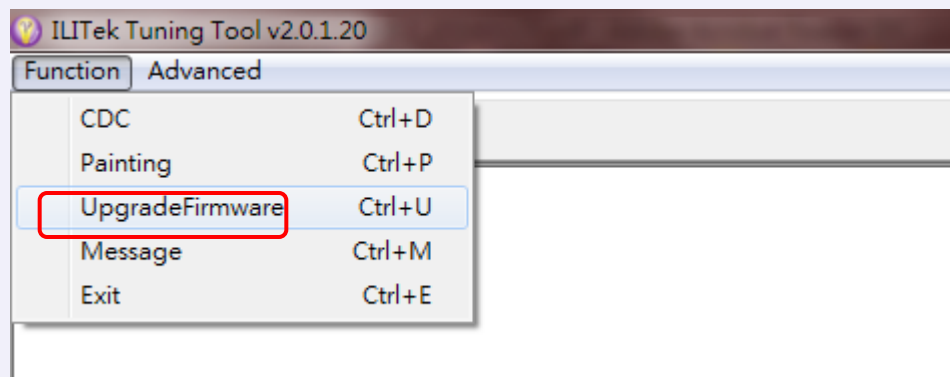
# Outline

I ❤️ Innovation

- ❖ 燒錄基本 FW
- ❖ Pin腳設定
- ❖ Touch Tuning
- ❖ 保存.hex file
- ❖ Frequency Spectrum

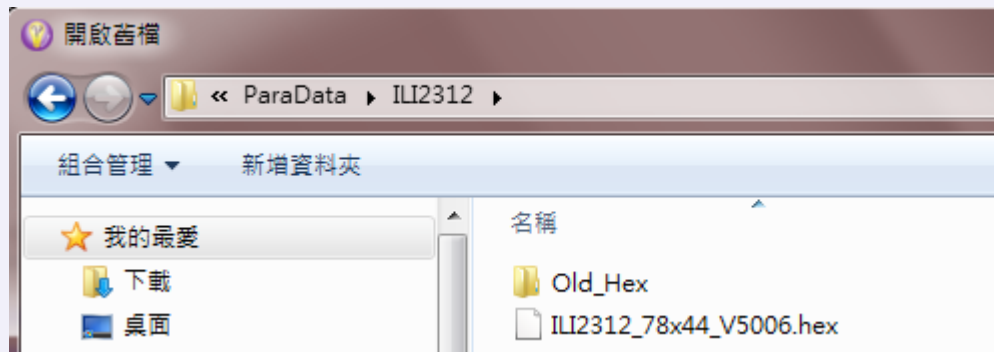
# 1 燒錄基本FW

## ❖ 燒錄Tuning FW

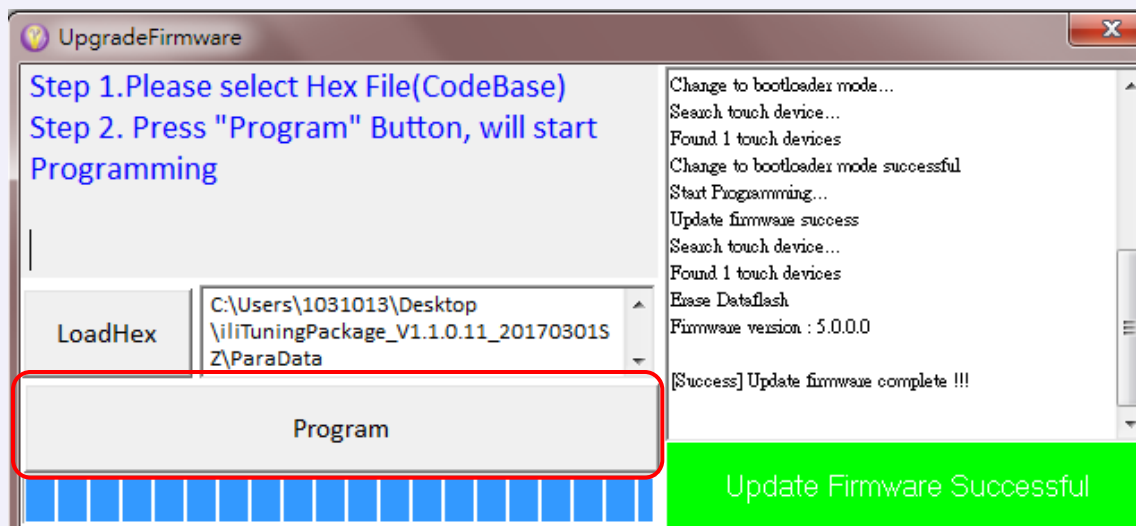


# 1 燒錄基本FW

- ❖ FW在Tuning tool路徑下的ParaData
- ❖ 再依據 IC 型號選擇對應文件夾下的hex



- ❖ 點選program後燒錄成功會顯示如下圖



## 2 Pin腳設定

### ❖ 點選 Connect 後讀取TP 參數

Wait for Connection the Tool!

Read TP parameter?

是(Y) 否(N)

Tuning Parameter(Hotkey : Ctrl + T)

Panel Information

|              |            | I2C Address                      |          |
|--------------|------------|----------------------------------|----------|
| ILI2312      | DisConnect | 0x82                             | 0xBA     |
|              |            | <input type="checkbox"/> USEWiFi |          |
| X Channel    | 78         | Interface                        | USB      |
| Y Channel    | 44         | F/W Version                      | V5.0.0.0 |
| X Resolution | 16384      | Protocol Ver.                    | V2.7.1   |
| Y Resolution | 9600       | Core Ver.                        | V5.0.0.6 |

Touch Para. | ADC | System Info. | Setting

| Item                              | Value |
|-----------------------------------|-------|
| TOUCH_LEVEL                       | 20    |
| POINTS_SEPARATE                   | 1     |
| SEPARATE_LEVEL                    | 150   |
| PENDING_REJECTION_ENABLE          | 1     |
| PENDING_DROP_POINT_CNT            | 6     |
| PENDING_MIN_POINT_LEVEL           | 135   |
| INTERPOLATION_TYPE                | 1     |
| INTERPOLATION_X_FIRST_SCALE       | 10    |
| INTERPOLATION_X_LAST_SCALE        | 10    |
| INTERPOLATION_Y_FIRST_SCALE       | 10    |
| INTERPOLATION_Y_LAST_SCALE        | 10    |
| INTERPOLATION_THUMB_X_FIRST_SCALE | 15    |
| INTERPOLATION_THUMB_X_LAST_SCALE  | 15    |

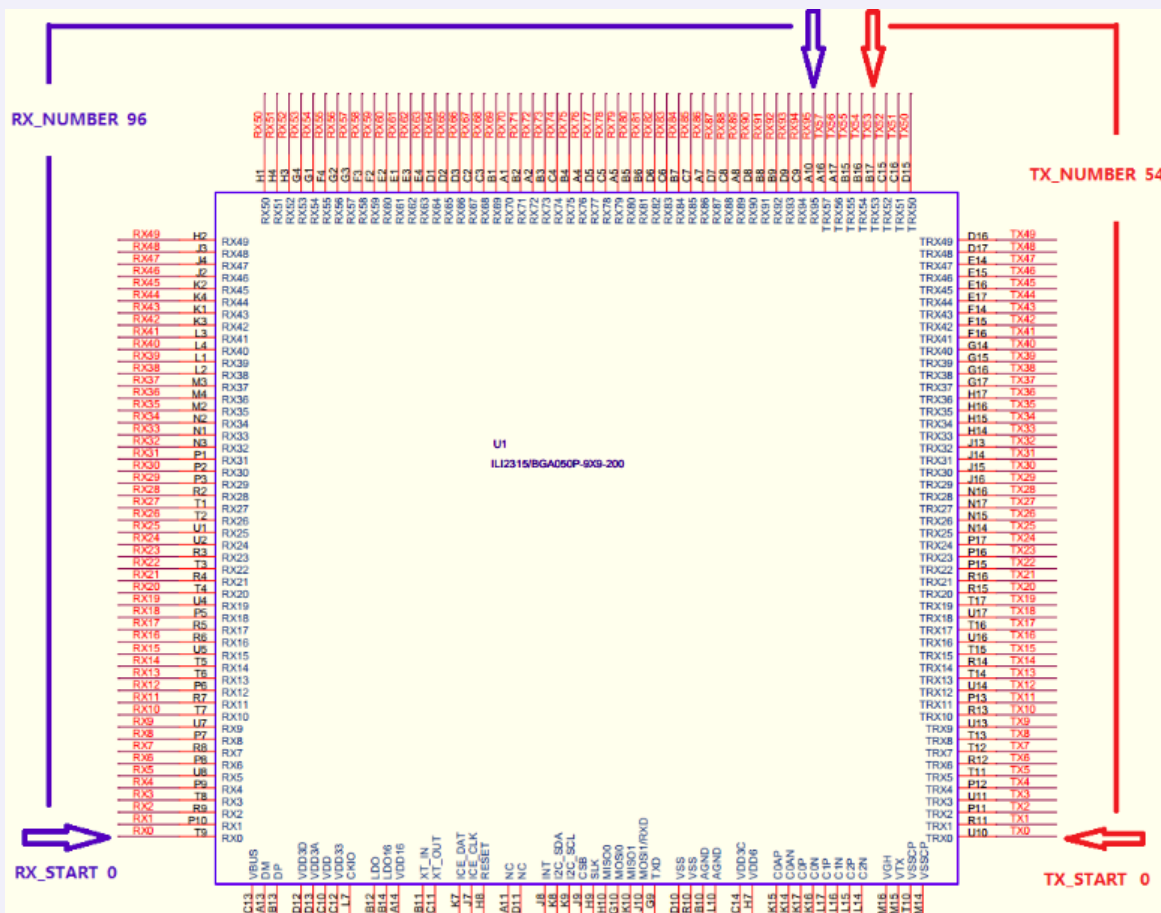
☐ IC22XX Set

ILITek Read from TPL

LoadTPL Load from File

# 2 Pin腳設定

- ❖ 根據原理圖實際使用到的pin腳 填入ADC頁面的設定
- ❖ 點選Set後寫入 IC 寄存器

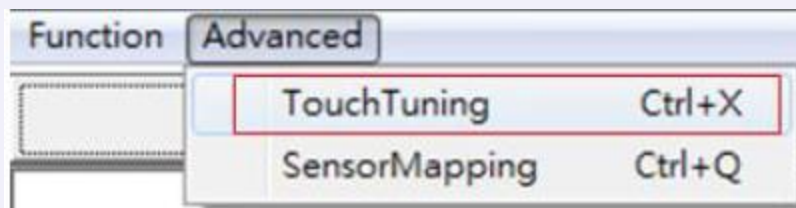


| Touch Para.    | ADC   | System Info. | Setting |
|----------------|-------|--------------|---------|
| Item           | Value |              |         |
| RX_START_CH    | 0     |              |         |
| TX_START_CH    | 0     |              |         |
| RX_CH_NUM      | 96    |              |         |
| TX_CH_NUM      | 54    |              |         |
| RX_DIRECTION   | 1     |              |         |
| TX_DIRECTION   | 1     |              |         |
| TX_PULSE_WIDTH | 350   |              |         |
| PULSE_NUMBER   | 8     |              |         |
| MM_TAP_MODE    | 0     |              |         |
| BK_MODE        | 2     |              |         |
| BK_DAC_PW_M    | 6     |              |         |
| BK_DAC_TD_M    | 23    |              |         |
| BK_CLK_FREQ    | 2     |              |         |

Total number of RX channel. (2~79) ☐ IC22XX Set

# 3 Touch Tuning

- ❖ 設定好pin腳後, 點選tuning tool介面左上方的 TouchTuning

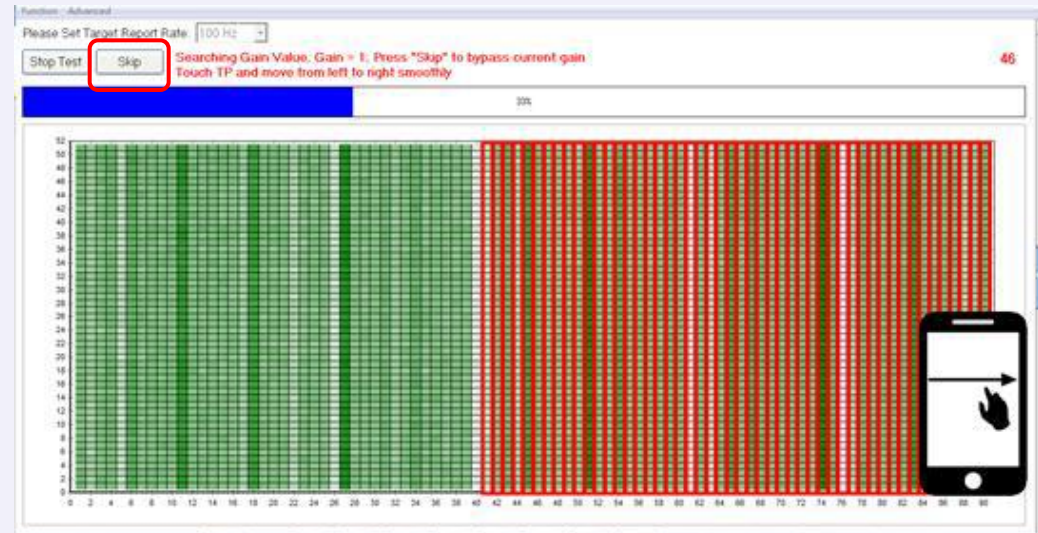


- ❖ 進入後點選Start Test



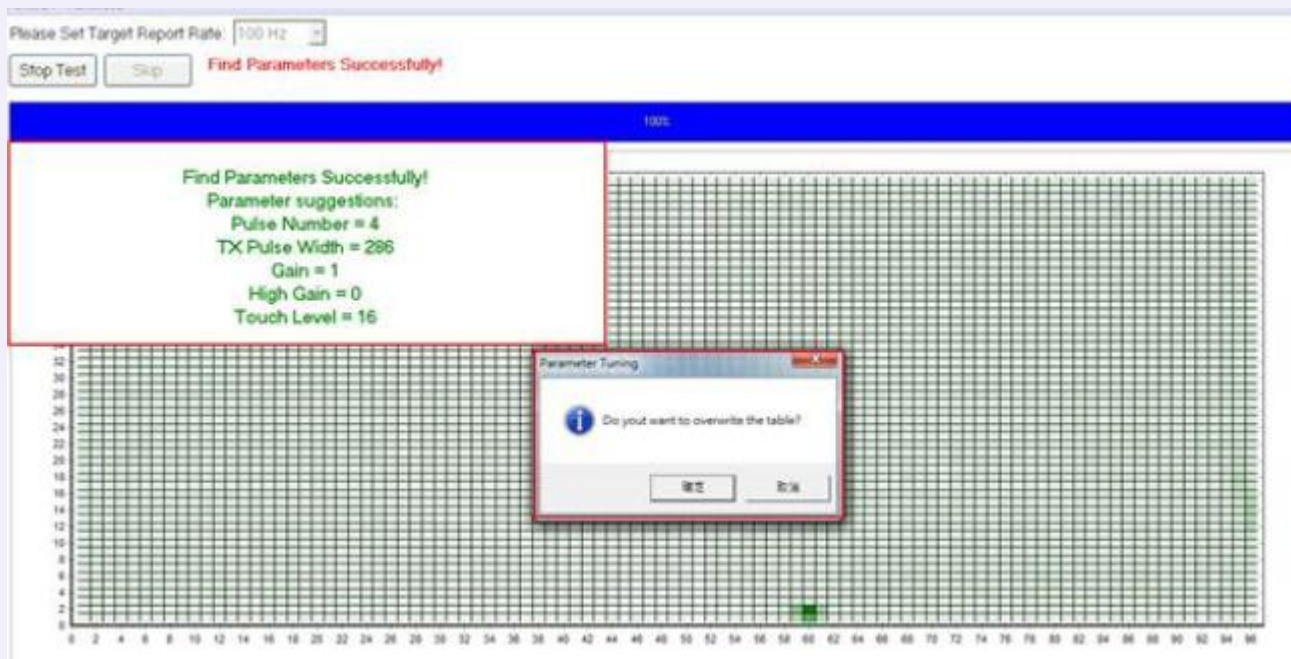
# 3 Touch Tuning

- ❖ 依據提示由左至右 / 由上至下畫線, 完全消除紅色框線後完成 Tuning
- ❖ 若是無法消除紅框線, 可按 Skip 按鈕, 增益會增加 1, 此時再重複畫線步驟即可



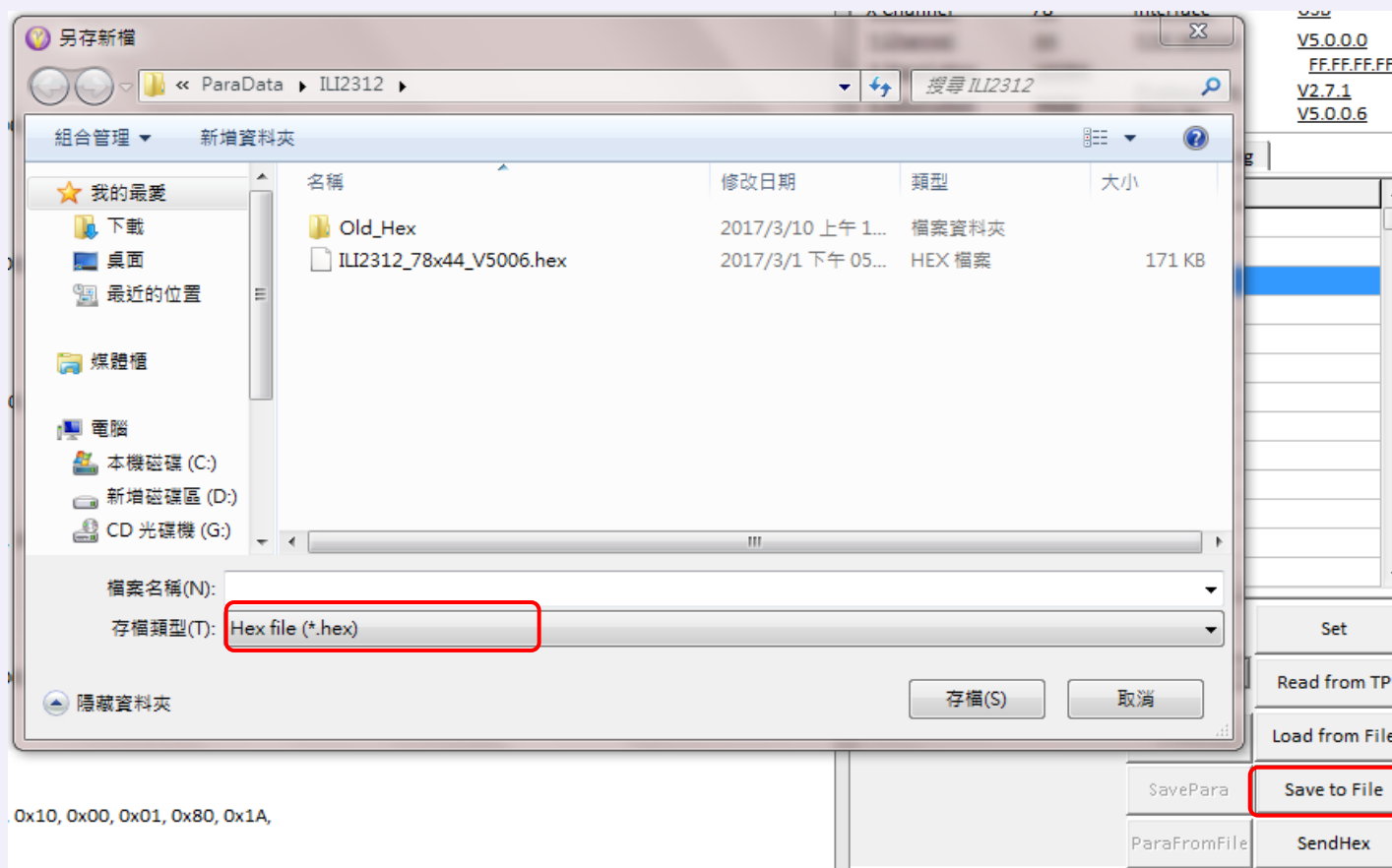
# 3 Touch Tuning

- ❖ 設定完成後會自動產生基本參數並寫入到 IC
  - Pulse Number : 每產生一面資料所平均取樣的資料個數
  - TX Pulse Width :  $48M/2(TXPW+1) = \text{freq.}$  能夠算出TX充電頻率
  - Gain : 訊號增益, 設定越大感應量越高
  - Touch Level : 報點閾值



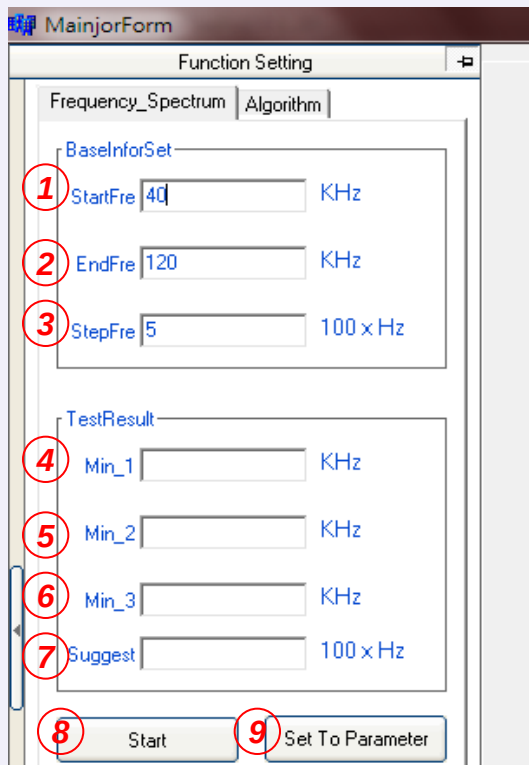
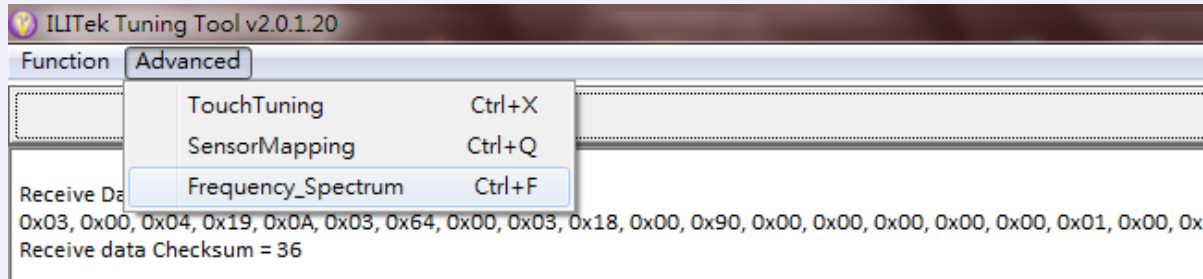
# 4 保存.hex file

- ❖ Touch Tuning後確認畫線測試OK後保存調適好的FW
- ❖ 點選 Save to File, 存檔類型選擇 Hex file, 再自行命名
- ❖ 請勿覆蓋Tool內的初始hex檔案



# 5 Frequency Spectrum

## ❖ Frequency Spectrum : 用於偵測噪聲干擾的頻段

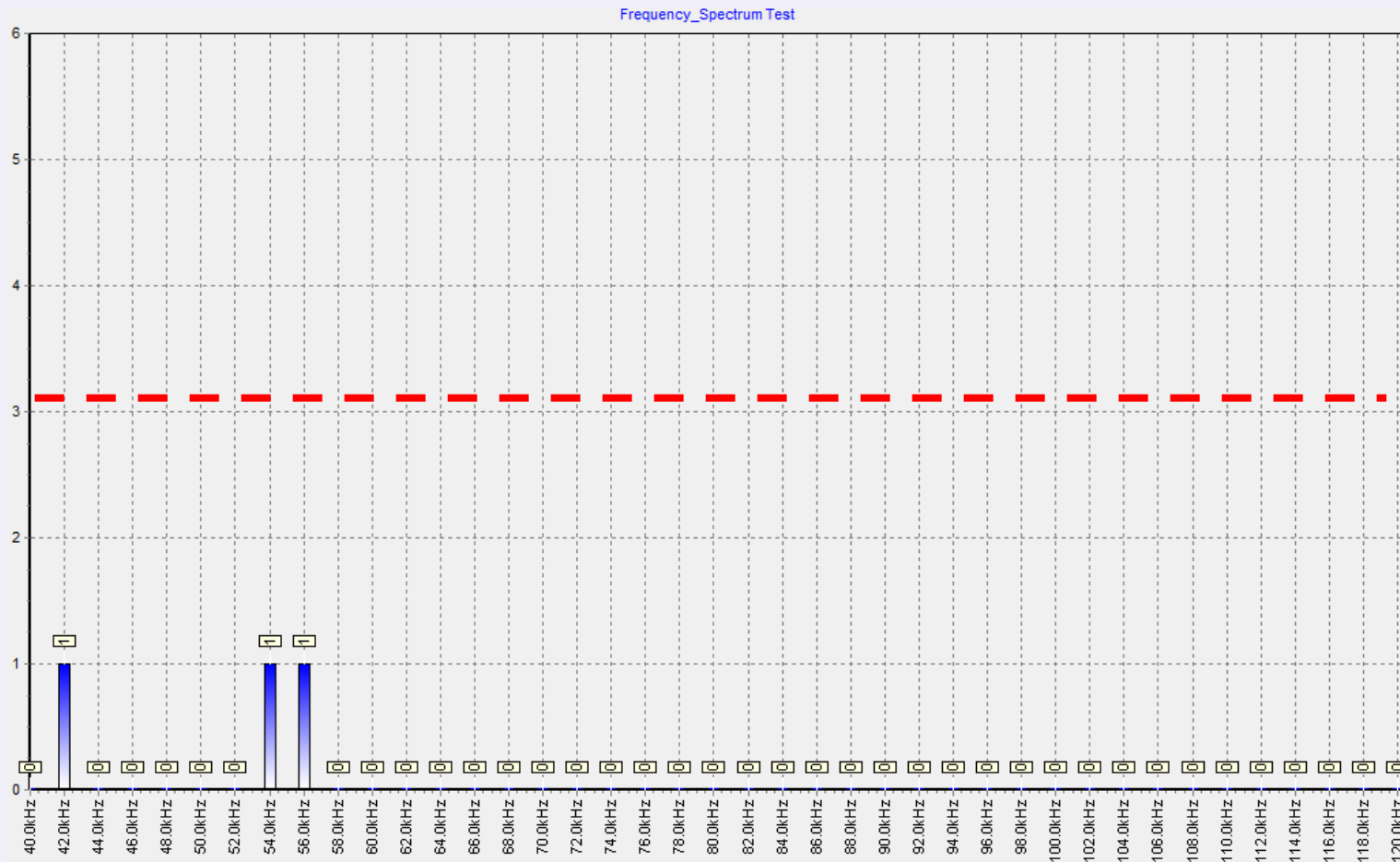


- 1 掃頻起始頻率, 最小30 kHz, 建議設定在40 kHz
- 2 掃頻截止頻率, 最大120 kHz
- 3 掃頻間格,
- 4 偵測跳動量最小的頻點 1
- 5 偵測跳動量最小的頻點 2
- 6 偵測跳動量最小的頻點 3
- 7 建議的工作頻率
- 8 開始掃頻按鈕
- 9 將掃頻後建議的工作頻率寫入IC

# 5 Frequency Spectrum

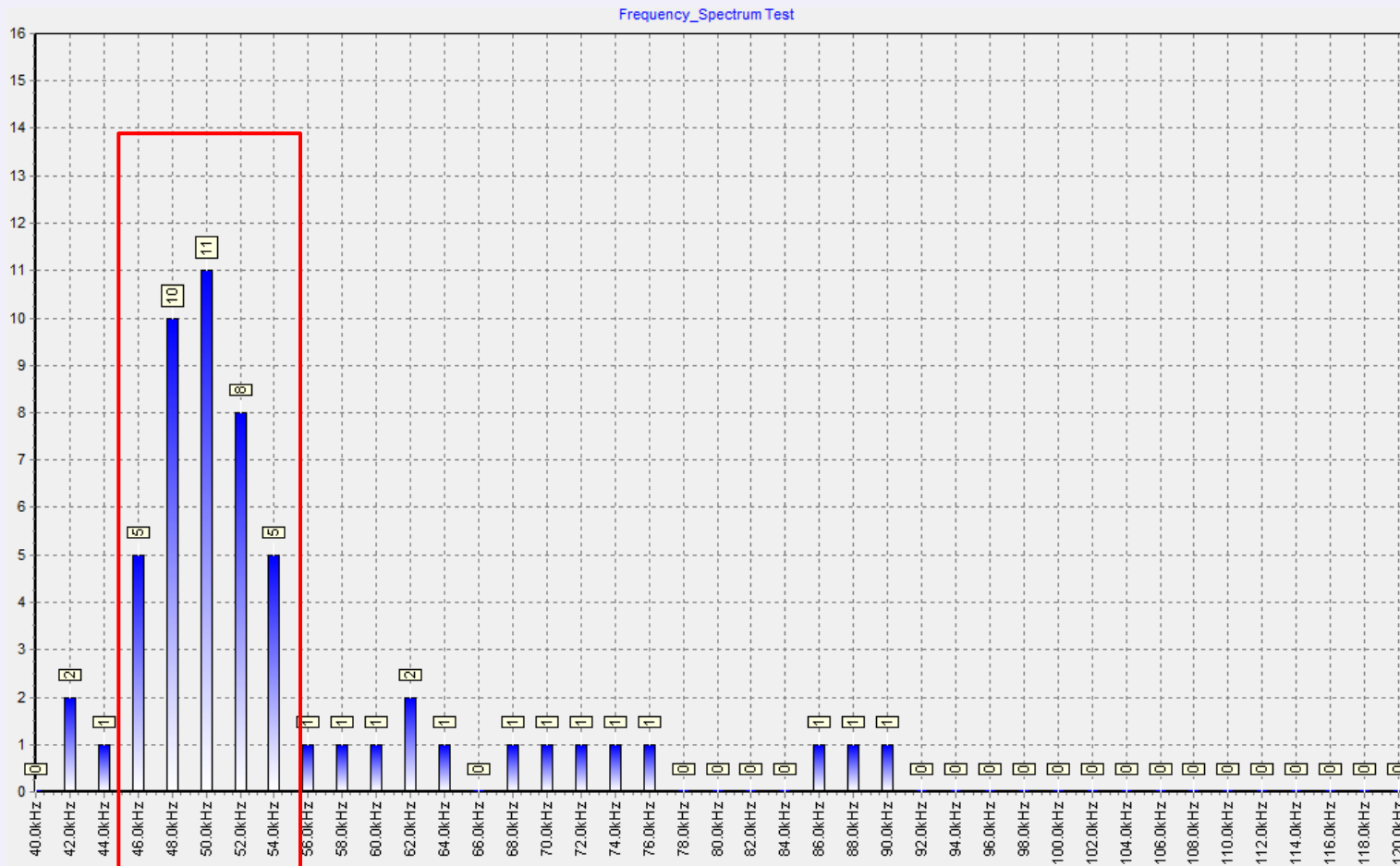
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❖ 一般無干擾情況下, 跳動量在3以內



# 5 Frequency Spectrum

- ❖ 使用信號產生器設定 50 kHz/ 3Vpp / 正弦波
- ❖ 按Start 按鈕掃頻 並將手指按壓在TP上, 可以偵測到50 kHz附近有干擾



# 5 Frequency Spectrum

- ❖ 點選 Set To Parameter, 將掃頻後的建議頻率換算為TXPW 寫入 IC
- ❖  $(48\text{M}/40\text{k}) / 2 - 1 = 599 = \text{TXPW}$

TestResult

Min\_1  KHz

Min\_2  KHz

Min\_3  KHz

Suggest  100 x Hz

| Item           | Value |
|----------------|-------|
| RX_START_CH    | 0     |
| TX_START_CH    | 0     |
| RX_CH_NUM      | 96    |
| TX_CH_NUM      | 54    |
| RX_DIRECTION   | 1     |
| TX_DIRECTION   | 1     |
| TX_PULSE_WIDTH | 599   |
| PULSE_NUMBER   | 8     |