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eGalaxTouchManager+ Advanced User Guide For EETI Orion Family

EETI CONFIDENTIAL

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FOR 深圳市南泉電子科技有限公司(禾伸堂客戶)

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1. Introduction

By using **eGalaxTouchManager+ (TM+)**, you can adjust parameters to maximize the potential of the EETI Orion series touch solution.

TM+ consists of **Basic Settings** and **Advanced Settings**. You can achieve a proper parameter setting for general-purpose applications through a semi-automated tuning process in **Basic Settings**. For more advanced applications such as marine monitors, military computers, and medical touch screens that require a stronger anti-interference capability and **eGalaxPen** features, you will need to adjust the parameters manually in the **Advanced Settings**.

This advanced user manual will teach you how to configure the advanced parameters, which enables you to utilize the full potential of Orion IC and tackle technical issues for your clients.

Notice:

Any inappropriate configuration will cause the touch system to fail to work; therefore, we **strongly recommend** that you should learn the knowledge of PCAP before configuring the **Advanced Settings**. EETI provides numerous informative documents, such as working principles and installation guides. For further information, feel free to contact sales@eeti.com.

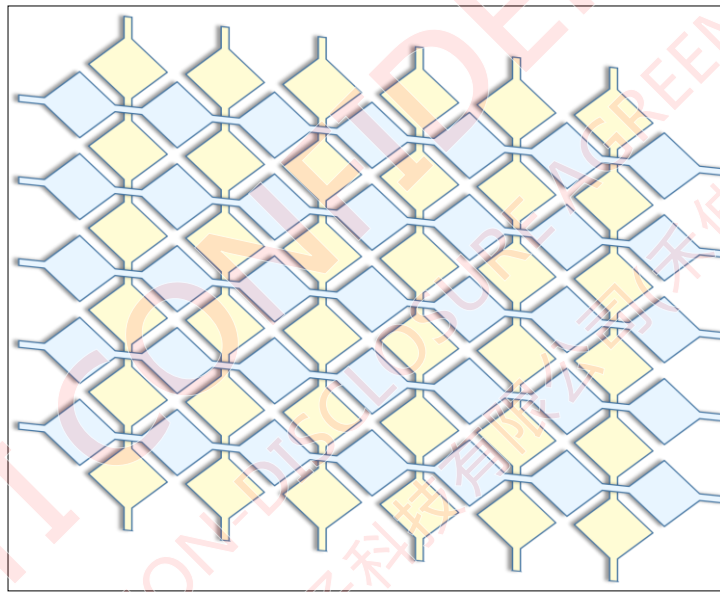
2. Preparation

2.1. Working Principle

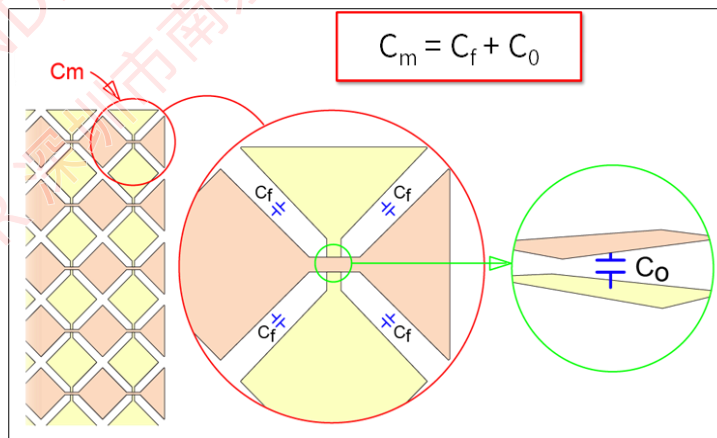
2.1.A. Finger Touch

PCAP touch panel is one kind of electrode pad that usually consists of transparent conductors (such as ITO, Meta Mesh, silver nano-wire, etc.) and glass or a film. Conductors as electrodes are in a diamond shape or other unique shapes.

The interlacing conductor matrix will create mutual capacitance between each row and column.



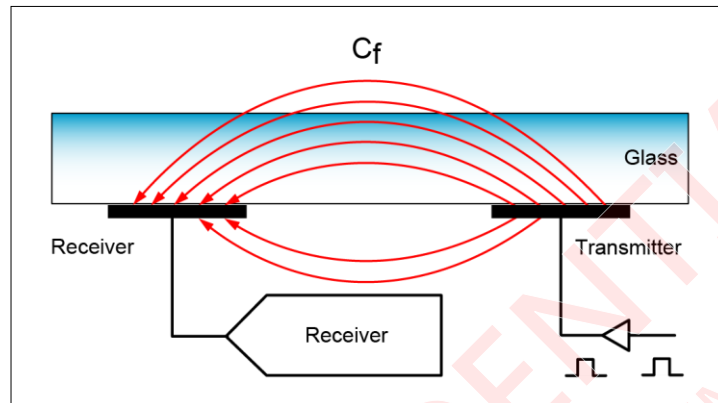
Mutual capacitance (C_m) consists of C_f and C_o on each node.



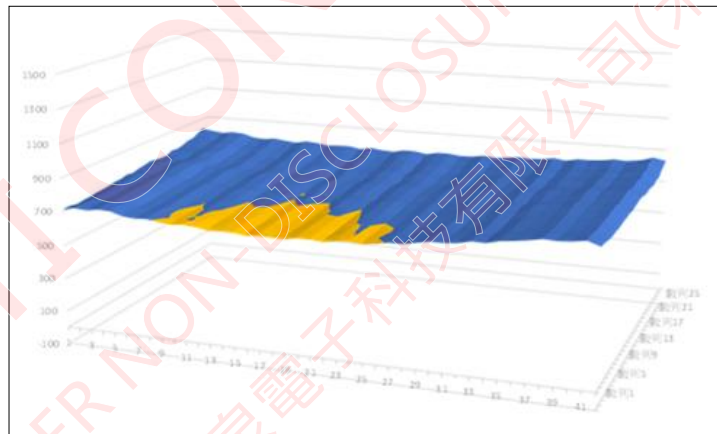
C_f is the fringe capacitance of Tx and Rx, which can be changed by the finger touch. The variation of C_f can be denoted as ΔC_f . C_o is the overlap capacitance of Tx and Rx, which will

NOT be changed by the finger touch.

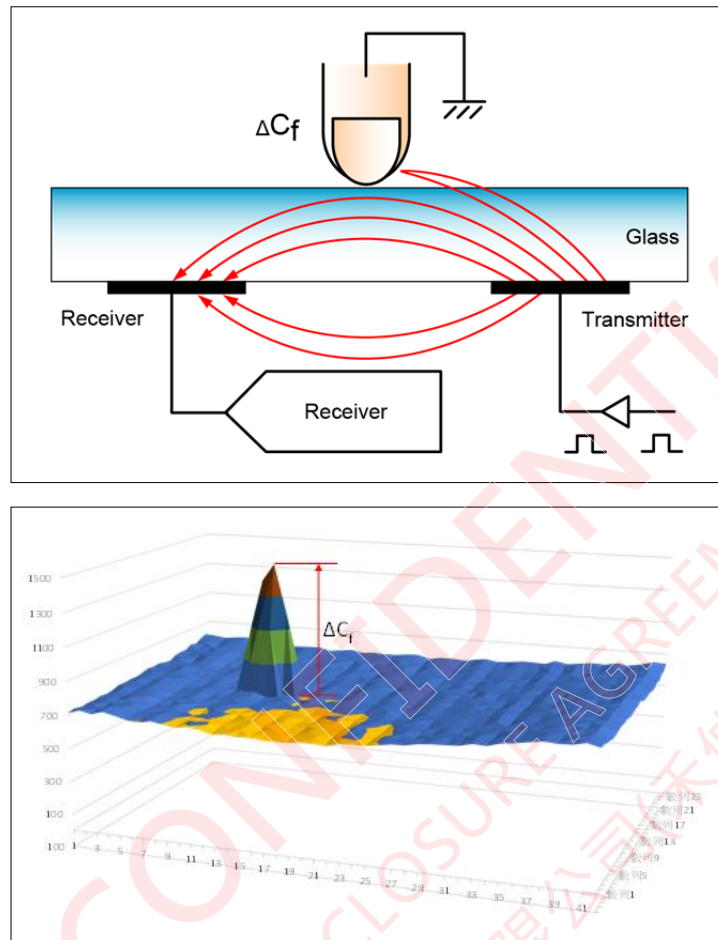
Signal driven by Tx will be coupled to Rx. The signal value we measured is called **Raw Signal**.



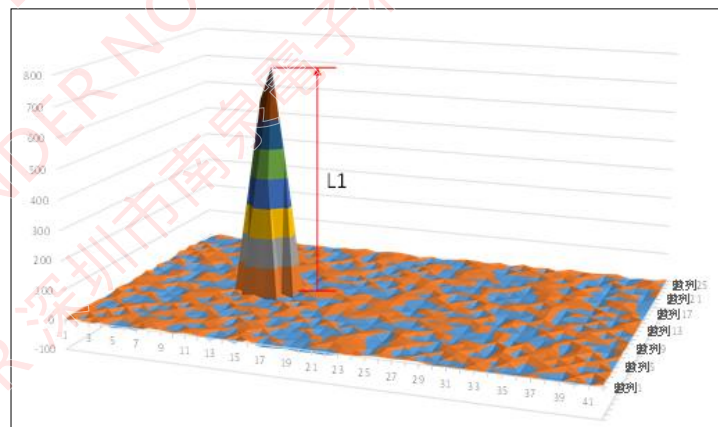
A capacitance image is composed of **Raw Signal** measured on each node of the electrode matrix. When there is no finger touch, this raw signal capacitance image is called **Baseline**.



When a finger touches the touch panel surface, it will change the original mutual capacitance value, and the variation of this mutual capacitance value can be denoted as ΔC_f .

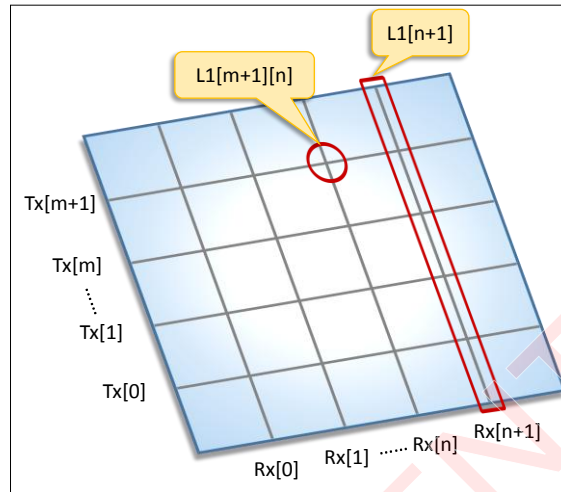


By calculating the change from baseline to the current Raw Signal, we can derive the **L1** touch signal.



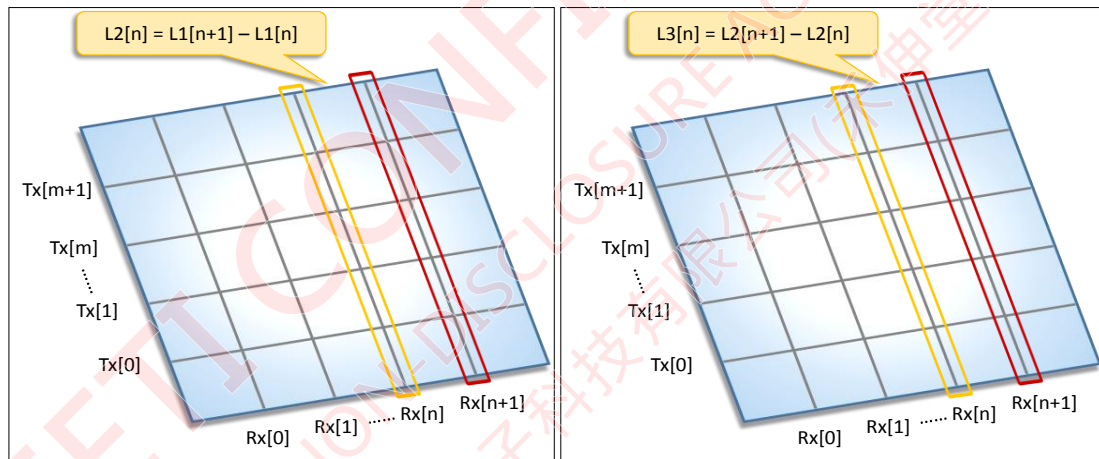
L1[n+1]= **L1** signal on the Rx[n+1] channel

L1[m+1][n]= **L1** signal at the intersection of Tx[m+1] channel and Rx[n] channel



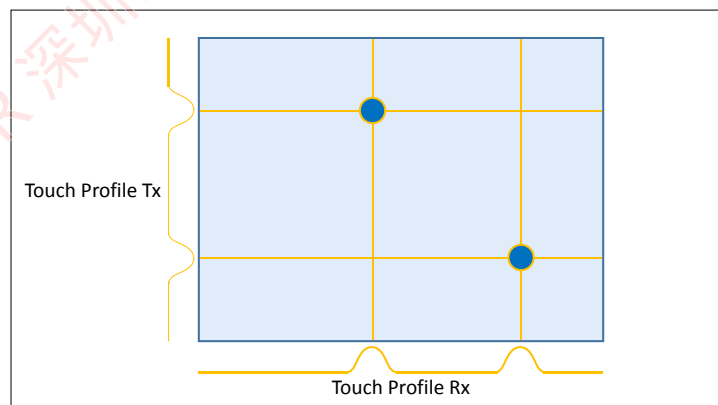
L2 Signal refers to **L1** signal change along Rx channels: $L2[n] = L1[n+1] - L1[n]$

L3 Signal refers to **L2** signal change along Rx channels: $L3[n] = L2[n+1] - L2[n]$



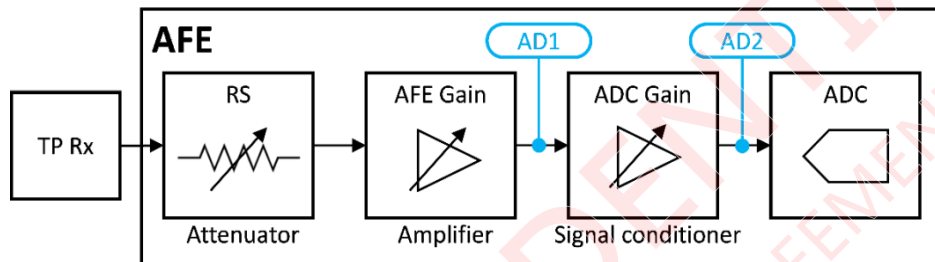
Two kinds of **Touch Profile (TPF)** are **Touch Profile Rx(PR)** and **Touch Profile Tx (PT)**.

Touch Profile Rx(PR) is the finger projection onto the X axis, and **Touch Profile Tx (PT)** is the finger projection onto the Y axis.



Measuring circuit:

Signal driven by Tx will perform capacitive coupling on Rx and enter into the Orion IC. After the signal enters the Orion IC, the analog front-end (AFE) circuit will measure and modify the signal volume. AFE has three components: attenuator, amplifier, and signal conditioner. An attenuator unit will help to suppress the noise and adjust the signal volume to input the suitable signal volume for the front-end amplifier. The signal conditioner will help modify the signal volume to an appropriate level for the ADC converter.



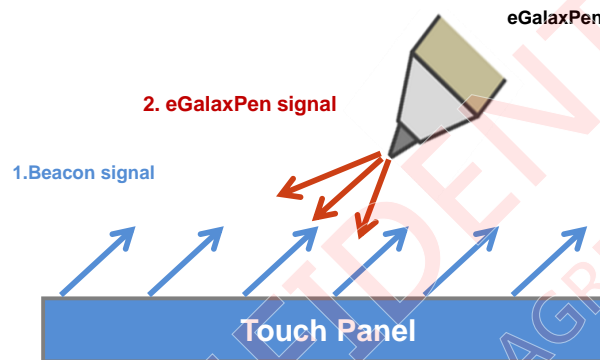
Glossary

Terms	Definition
RS	Attenuator level for signal matching and regulating Decreasing this parameter can increase the SNR.
AFE Gain	The gain of the front-end signal amplifier Decreasing this parameter can amplify the AD1 signal. ※ Please check the ADC1% page to avoid signal saturation.
ADC Gain	The gain of signal conditioner Increasing this parameter can amplify the AD2 signal. ※Please check the ADC2% page to avoid signal saturation.
AD1	AD1 is the measurement of the Front-end signal amplifier, and it should be within the specified range to avoid signal saturation or low SNR.
AD2	AD2 is the measurement of Signal conditioner, and it should be within the specified range to avoid signal saturation or low SNR.
ADC1 %	The saturation index for AD1 signal in percentage
ADC2 %	The saturation index for AD2 signal in percentage
Delay	Delay is the delay time for signal measuring. Due to the difference between different RC electrical loads, the signal may not be uniform along Tx. Increasing or decreasing this parameter may improve the situation.
Measure Count	Signal measuring counts (the cycles of signal waves driven by the transmitter). Increasing this parameter can increase the signal strength but decrease the reporting rate.

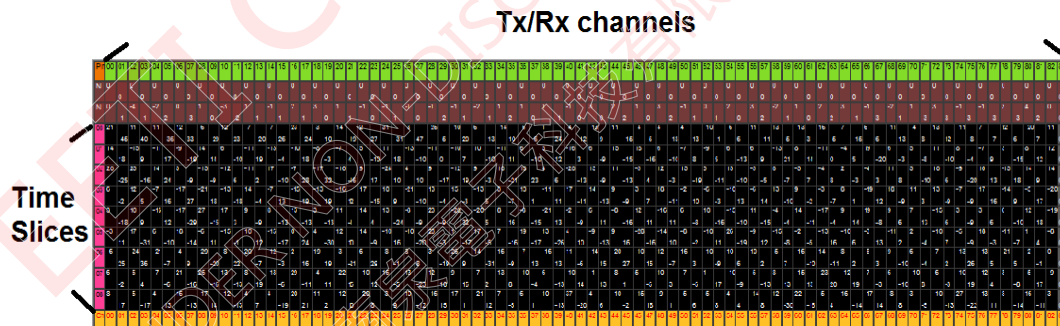
Scaling	Signal normalization. Two types of scaling are available: +1 and -1. If you change the scaling to +1, the overall value will be divided by 2. If you change the scaling to -1, the overall value will be multiplied by 2. ※ Adjusting this parameter will change the literal values of the signal only. It will NOT affect the Electrical characteristics.
Raw	The unprocessed signal receives from the receiver.
L1	L1 is the touch signal, and it is derived from the variation of the raw data.
L2	L2 is the variation between L1 values.
L3	L3 is the variation between L2 values.
Touch %	The ratio of capacitance change value received by Rx. ($\Delta C_f / C$) The touch panel designs and the system mechanism can affect Touch % .
DrivingAmp Level	The signal amplitude level. The higher the number, the greater the amplitude. Default: 12 (Max)

2.1.B. eGalaxPen

eGalaxPen is an active stylus that provides pressure sensing, tilt sensing, and functional buttons. With proper advanced parameter tuning, **eGalaxPen** can deliver an even better writing experience than a traditional pen. To communicate with the **eGalaxPen**, the EETI controller will send a beacon signal to trigger the **eGalaxPen**. In the corresponding period, the EETI controller will receive the signal driven by the **eGalaxPen**.



The signal received by **eGalaxPen** will be divided into slices based on different scan periods. The received signal will represent chronologically from top to bottom, as the following image shows:



Glossary

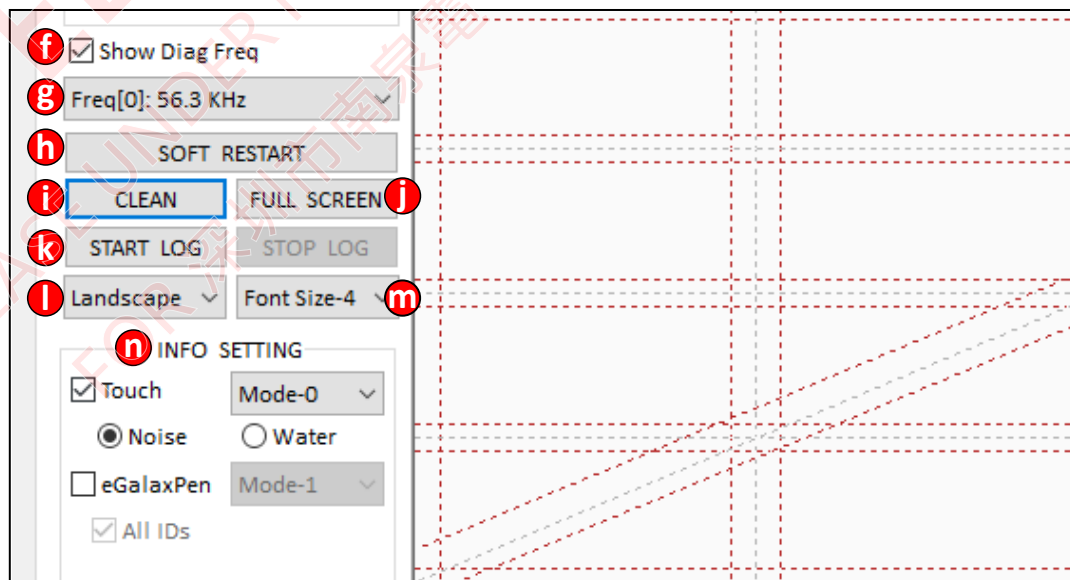
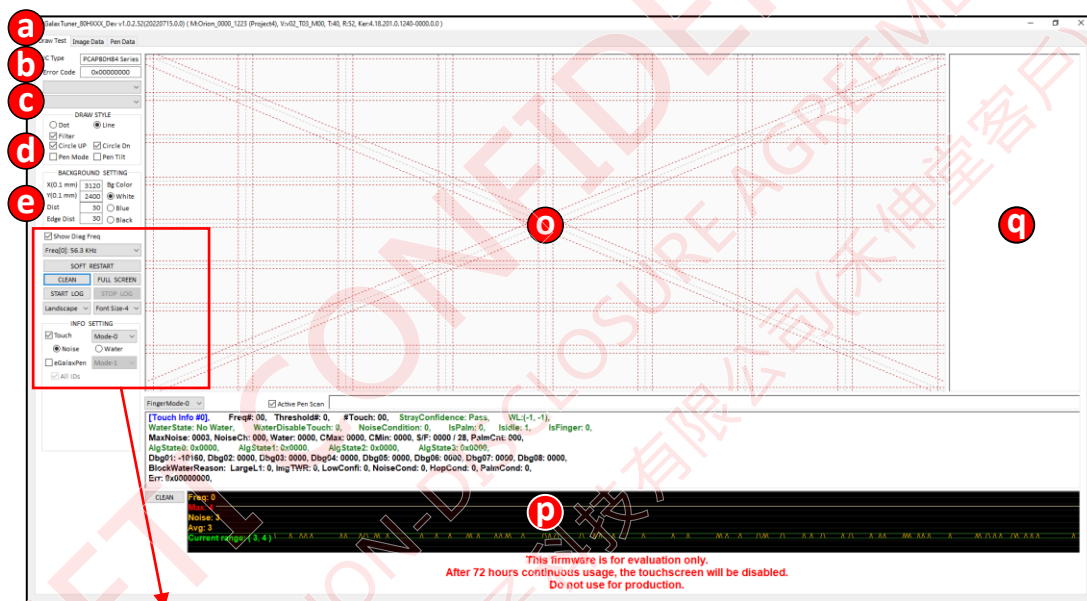
Terms	Definition
Beacon	Beacon is the signal driven by the touch panel to trigger eGalaxPen .
Button state	Normal : A Normal drawing state. Without any button is pressed. Eraser : Eraser function. By default the lower button. Barrel : Right click function. By default the upper button.
Hover	Hover state. It will occur when eGalaxPen is hovering over the touch screen.
Tip	Tip state. It will occur when the eGalaxPen taps on the touch screen.


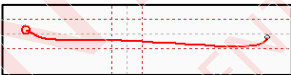





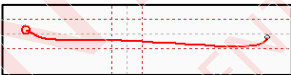





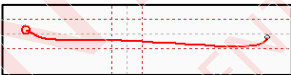




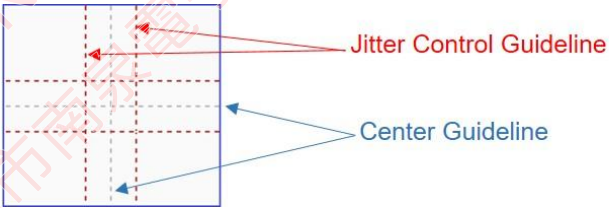
2.2. Introduction to eGalaxTuner

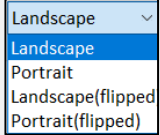
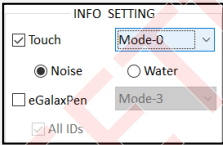
eGalaxTuner is the integration analysis tool in **TM+** that assists you in completing the following tasks:

- Check the touch performance.
- Check firmware status and touch information.
- Look up finger touch and eGalaxPen signal data.
- Collect informative debug log messages.

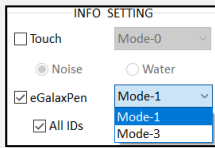
2.2.A. Draw Test



Index	Description						
a. Title Bar	You can find the application version, the FW model name, the firmware version, the kernel version, and the numbers of Tx and Rx channels in the Title bar .						
b. IC Type	The type of touch IC						
c. Error Code	The error code						
d. DRAW STYLE	<table border="1"> <tr> <td> <p>Dot: Dots represent point data.</p>  </td><td> <p>Line: A connected line represents point data</p>  </td></tr> <tr> <td> <p>Filter Enable: Enable Anti-Aliasing</p>  </td><td> <p>Filter Disable: Disable Anti-Aliasing</p>  </td></tr> <tr> <td> <p>Circle Up: The ending point of the touch</p>  </td><td> <p>Circle Down: The starting point of the touch</p>  </td></tr> </table>	<p>Dot: Dots represent point data.</p> 	<p>Line: A connected line represents point data</p> 	<p>Filter Enable: Enable Anti-Aliasing</p> 	<p>Filter Disable: Disable Anti-Aliasing</p> 	<p>Circle Up: The ending point of the touch</p> 	<p>Circle Down: The starting point of the touch</p> 
<p>Dot: Dots represent point data.</p> 	<p>Line: A connected line represents point data</p> 						
<p>Filter Enable: Enable Anti-Aliasing</p> 	<p>Filter Disable: Disable Anti-Aliasing</p> 						
<p>Circle Up: The ending point of the touch</p> 	<p>Circle Down: The starting point of the touch</p> 						
e. BACKGROUND SETTING	<p>X/Y (0.1mm): Active Area dimension</p> <p>Dist (0.1mm): Configure the distance value between the Center Guideline (grey) and the Jitter Control Guideline (red).</p>  <p>Edge Dist (0.1mm): Configure the Edge Guideline (red)</p> <p>Bg Color: Configure the background color - White/Blue/Black.</p>						
f. Show Diag Freq	If Show Diag Freq is checked, g. Frequencies will display the diagnostic frequency of the touch screen.						
g. Frequencies	Switch between different working frequencies.						
h. SOFT RESTART	Restart the controller software.						

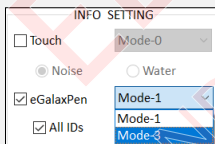
i. CLEAN	Clear the drawing window.
j. FULL SCREEN	Enter the full-screen mode.
k. START LOG / STOP LOG	<p>You can press the START LOG or STOP LOG to start or stop recording touch coordinates and touch information.</p> <p>After checking Touch or eGalaxPen in the Info Setting box, more detailed log information will be recorded.</p>
l. Orientation 	Change the drawing orientation.
m. Font size	Change the information font size.
n. INFO SETTING <input type="checkbox"/> Touch <input type="checkbox"/> eGalaxPen	<p>Enable showing the finger touch / eGalaxPen information (Different information modes can be switched by the drop-down menu)</p> <p>Noise: Display noise data in the Noise/Water Information window.</p> <p>Water: Display water data in the Noise/Water Information window.</p> <p>CLEAN: Clear data record in the Noise/Water Information window.</p>
o. Draw Test	The drawing area for the touch function test
p. Firmware Status Window (Touch part Mode-0) 	<ul style="list-style-type: none"> • Freq#: The current working frequency index • Threshold#: The current touch sensitivity settings index • #Touch: The number of valid touches detected • BaselineConfidence: The baseline status If the system deviates from its original normal condition, the BaselineConfidence will show Low. • WaterState: Display the Waterproofing state: No Water, Single-Touch, Dual-Touch, or Multi-Touch • WaterDisableTouch: Indicate if the controller is in “Level 2: Disable Touch” • NoiseCondition: Indicate controller is in “Level 1: Noisy Touch” • IsPalm: Indicate if the controller is in Palm Rejection state • IsIdle: Indicate if the controller is in the idle state • MaxNoise: The current maximum static noise value • NoiseCh: Indicate the maximum static noise value Rx channel. • Water: The current water quantity • CMax: The maximum L1 value • CMin: The minimum L1 value. • S/F: Indicate the drawing speed / Anti-Aliasing level • PalmCnt: The number of the suspicious palm area

p. Firmware Status
Window (eGalaxPen
part Mode-1)



- **ScanState:** The scan state of **eGalaxPen**
- **CurrRxLevel:** The current Rx signal scanning level
- **CurrTxLevel:** The current Tx signal scanning level
- **FreqIndex:** The current working frequency index
- **TotalTime:** The total valid drawing time of eGalaxPen
- **DebounceTime:** The amount of time the controller stays in the pen state after eGalaxPen leaves the screen.
- **TotalSNRF0:** The SNR of frequency 0
- **TotalSNRF1:** The SNR of frequency 1
- **ID#:** The ID number of **eGalaxPen**
- **PenAttr:** Tx/Rx algorithm information
- **PenDataAttr:** **eGalaxPen** state information
- **RxAttr:** Rx algorithm information
- **TxAttr:** Tx algorithm information
- **PenExist:** Indicate if **eGalaxPen** is detected
- **Pressure:** **eGalaxPen** pressure value
- **XTilt:** **eGalaxPen** X-axis pen tilt data
- **XSinVal:** Information used for calculating the X-axis pen tilt angle
- **YTilt:** **eGalaxPen** Y-axis pen tilt data
- **YSinVal:** Information used for calculating the Y-axis pen tilt angle
- **ButtonState:** Button states can be in tip, eraser, or barrel

p. Firmware Status
Window (eGalaxPen
part Mode-3)

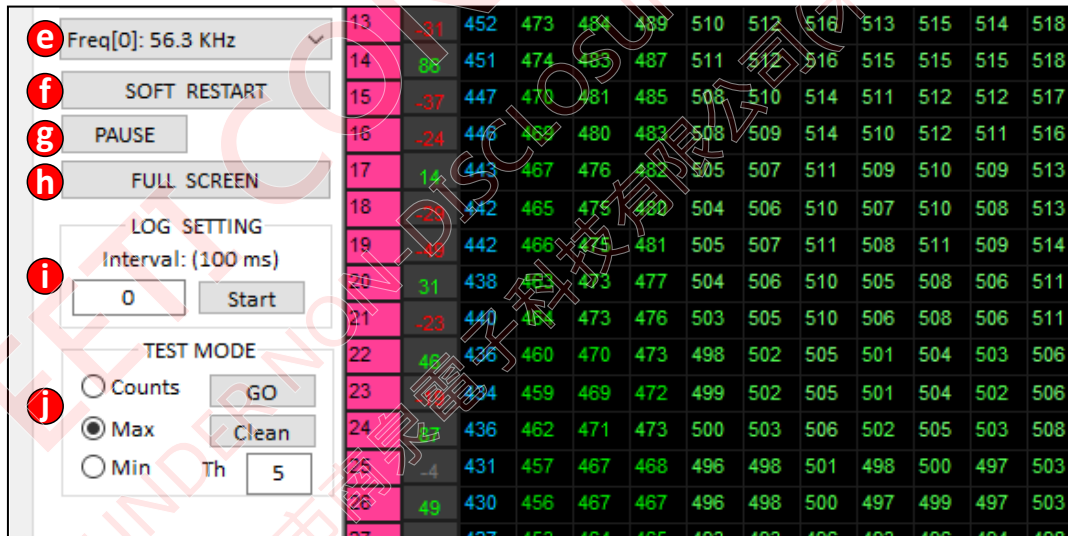
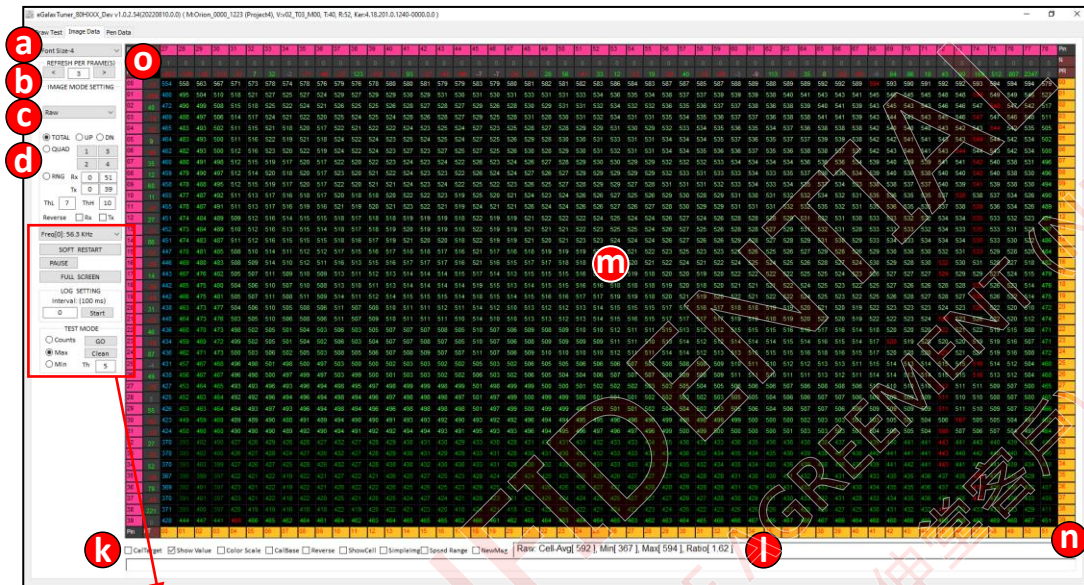


- **ScanState:** The scan state of **eGalaxPen**
- **CurrRxLevel:** The current Rx scanning level
- **CurrTxLevel:** The current Tx scanning level
- **FreqIndex:** The current working frequency index
- **ID#:** The ID number of **eGalaxPen**
- **Speed:** Speed of the drawing
- **RxSignalDetectVal:** The Rx signal value
- **RxPressureDetectVal:** The Rx pressure value
- **RxEdgeVal:** The Rx edge signal value
- **TxSignalDetectVal:** The Tx signal value
- **TxPressureDetectVal:** The Tx pressure value
- **TxEdgeVal:** The Tx edge signal value

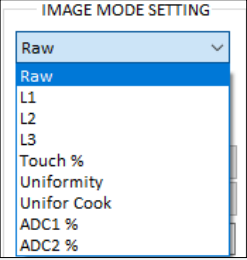
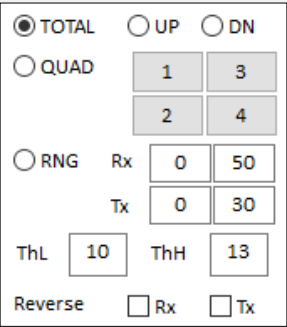
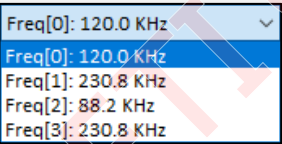
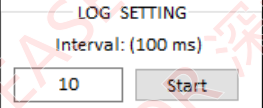
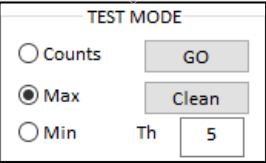
<p>p. Noise/Water Information Window</p>	<p>Noise:</p> <ul style="list-style-type: none"> • Freq: The current working frequency index • Max: The historical high static noise value • Noise: The current static noise value • Avg: The average static noise value • Current range: The range of static noise value within a certain period <p>Water:</p> <ul style="list-style-type: none"> • Water-History Max: The historical high water quantity • Water-Val: The current water quantity • Water-Current range: The range of water quantity within a certain time • Ratio: The ratio of maximum water quantity to minimum water quantity
<p>q. Touch Information Window</p>	<p>The information shows in the following order: the touch ID, report rate, X-coordinate, Y-coordinate, contact signal, and contact size of each valid touch.</p> <div data-bbox="547 1066 1142 1256" style="border: 1px solid black; padding: 5px;"> <p>00:204Hz 01224, 14647, 00941, 00010 01:202Hz 03253, 13379, 00929, 00012 02:203Hz 05473, 12422, 00749, 00009</p> <p>ID: Report rate X, Y, Contact Signal, Contact Size</p> </div>

2.2.B. Image Data

i. Image Data Viwer

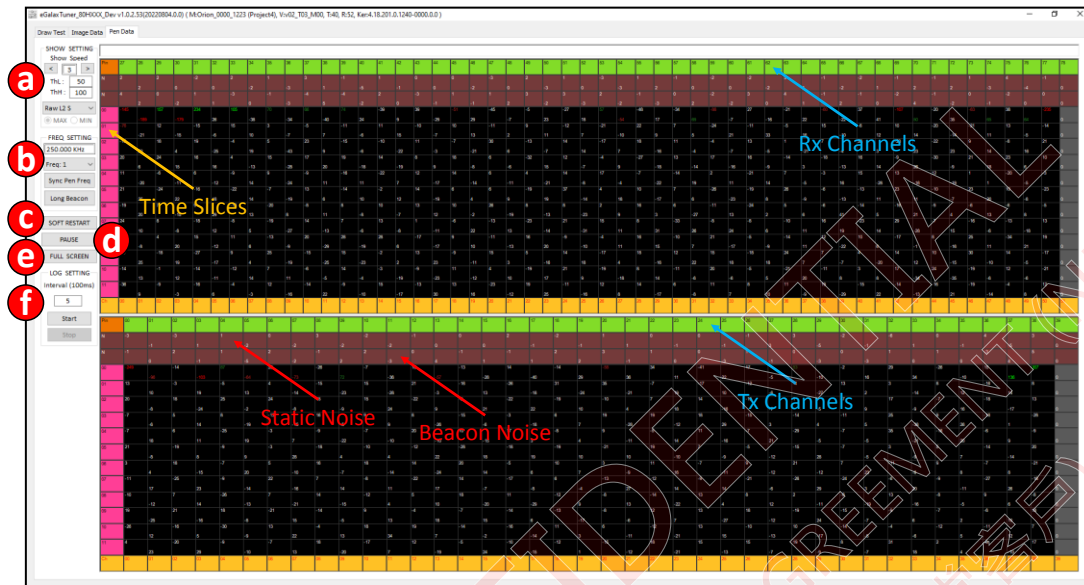


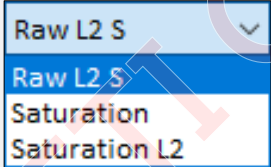
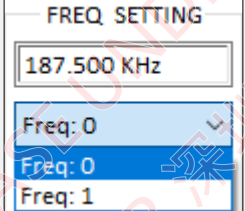
Index	Description
a. Font Size	Change the font size of I. Raw Data Information and m. Image Window .
b. REFRESH PER FRAME(S)	Image Data refreshing rate (1 is the highest)

<p>c. IMAGE MODE SETTING</p> 	<p>Use the drop-down menu to select the data type.</p>
<p>d. Image Range</p> 	<p>Image Range displayed settings.</p> <ul style="list-style-type: none"> • TOTAL / UP / DN: Display the full image / Display the top half image / Display the bottom half image. • QUAD: Select which quadrant of the image to display. • RNG: Change the display range of Tx and Rx. • ThL: If the absolute signal value is greater than ThL, the value will be in dark green or dark red. • ThH: If the absolute signal value is greater than ThH, the value will be in bright green or red. Absolute signal value less than ThL will be in grey. • Reverse Rx / Tx: Reverse the order of Rx / Tx channel.
<p>e. Frequencies</p> 	<p>Switch between different working frequencies.</p>
<p>f. SOFT RESTART</p>	<p>Restart the controller software.</p>
<p>g. PAUSE / START</p>	<p>PAUSE : Stop refreshing the Image Data. START : Continue refreshing the Image Data</p>
<p>h. FULL SCREEN</p>	<p>Enter the full-screen mode</p>
<p>i. LOG SETTING</p> 	<p>Interval: Interval between each log (Unit: 100ms) START to start recording.</p>
<p>j. TEST MODE</p> 	<ul style="list-style-type: none"> • Counts: Count the value that is greater than Th of each node. • Max: The historical high value of each node. • Min : The historical low value of each node. • GO / STOP: Start or Stop the TEST MODE. • Clean: Clear all the historical data on each node. • Th : Threshold for TEST MODE

k. Auxiliary Functions	<ul style="list-style-type: none"> CalTarget: The location of the CalTarget channel. Show Value: Show the digits in Image Data window. Color Scale: Color gradient display mode. Colorize the nodes according to its value. ShowCell: Show the average finger signal.
l. Raw Data Information	Display Cell average (Cell-Avg), minimum (Min), maximum (Max), and the ratio of Max to min (Ratio) for that page.
m. Image Window	The Image Window will display the corresponding signal value based on the signal type selected in c. IMAGE MODE SETTING .
n. Right/Bottom (Yellow Index)	Index Tx channel and Rx channel from 0
o. Left/Top (Pink Index)	The Tx channel index and the Rx channel index with the pink background correspond to the physical IC pin numbers. This information can be used to set Tx / Rx channel manually. Please refer to chapter 10.2.A in the TM+ user manual.

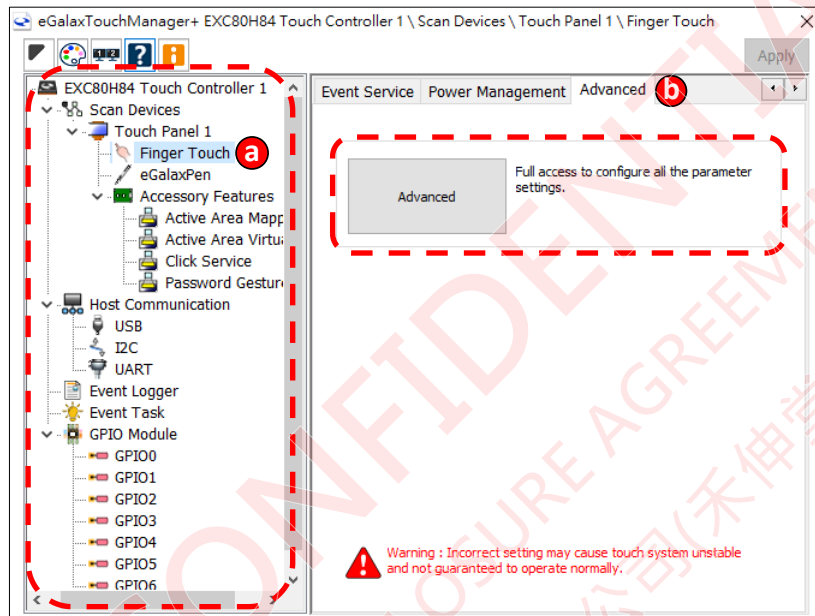
2.2.C. eGalaxPen Data



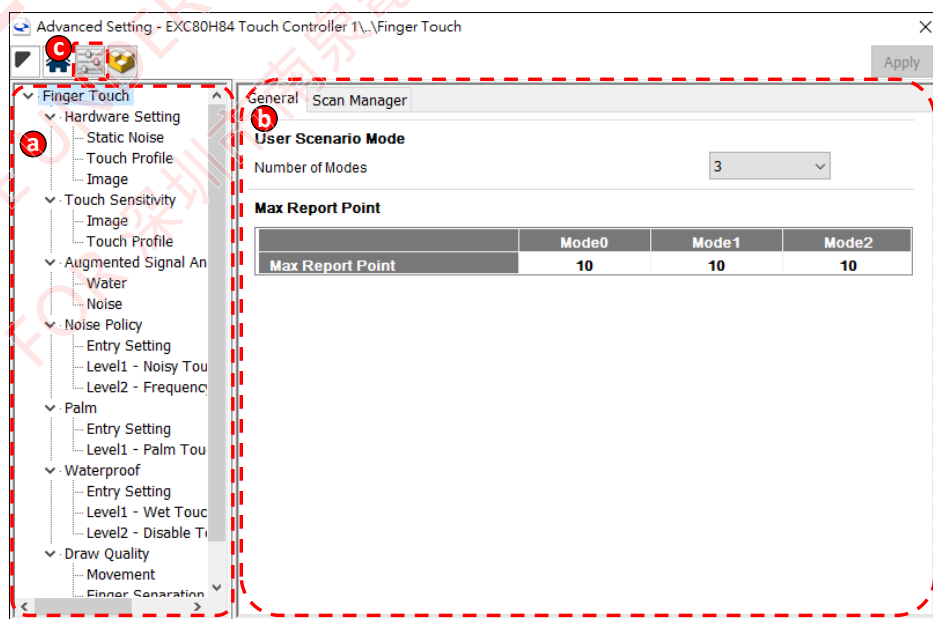
Index	Description
<p>a. SHOW SETTING</p> 	<ul style="list-style-type: none"> • Show Speed: Window refreshing rate (1 is the highest) • ThL: If the absolute signal value is greater than ThL, the value will be in dark green/dark red. • ThH: If the absolute signal value is greater than ThH, the value will be in light green/light red. ※ If the absolute signal value is less than ThL, it will be grey. • Data: Use the drop-down menu to select the data type.
<p>b. FREQ SETTING</p> 	Switch between different working frequencies with the drop-down menu.
c. SOFT RESTART	Restart the controller software.
d. PAUSE / START	<p>PAUSE : Stop refreshing the Image Data.</p> <p>START : Continue refreshing the Image Data</p>
e. FULL SCREEN	Enter the full-screen mode
f. LOG SETTING	<p>Interval: Intervals between each log (Unit: 100ms)</p> <p>START to start recording the log information.</p>

3. Advanced Settings

After connecting the controller with **TM+**, the left panel will display different features in the form of a tree diagram. You can navigate the tree node to find the topic you need, such as **Touch Controller**, **Finger Touch**, or **eGalaxPen**. For example, you can find the **Advanced** **(b)** settings in **Finger Touch** **(a)**.

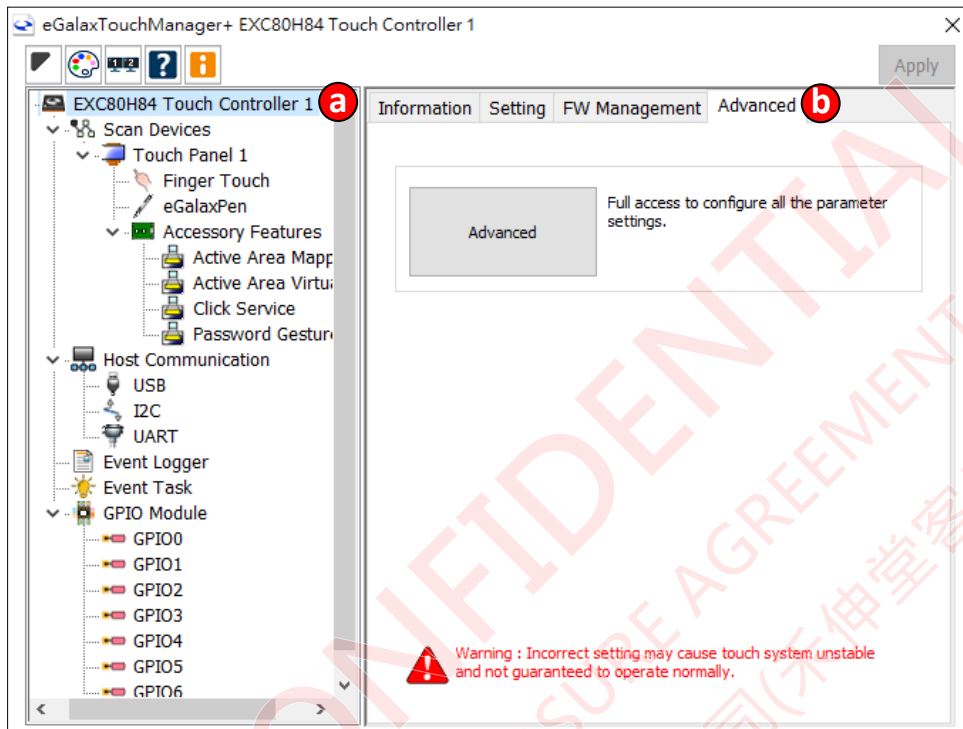


After entering **Advanced** settings, the left panel will display all features supported by the controller and the firmware in the form of a tree diagram. **(a)** Click on the tree node, and the right panel will show the corresponding setting page **(b)** Each feature has one or more pages. In **Advanced** settings, you can also open **eGalaxTuner** **(c)** to check the touch performance and observe signal variations.



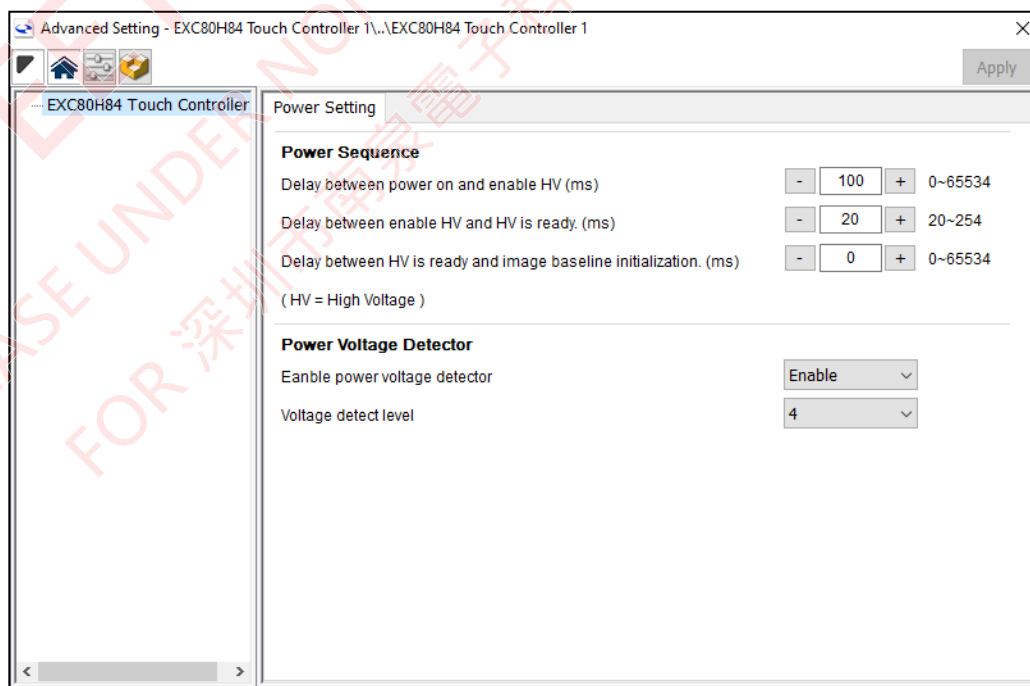
3.1. Touch Controller \ Advanced

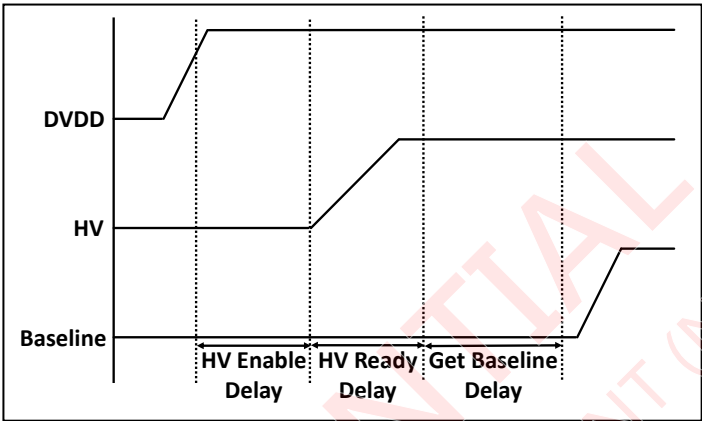
Click **Touch Controller 1** **a** and find the **Advanced** **b** settings in the right panel.



3.1.A. Touch Controller \

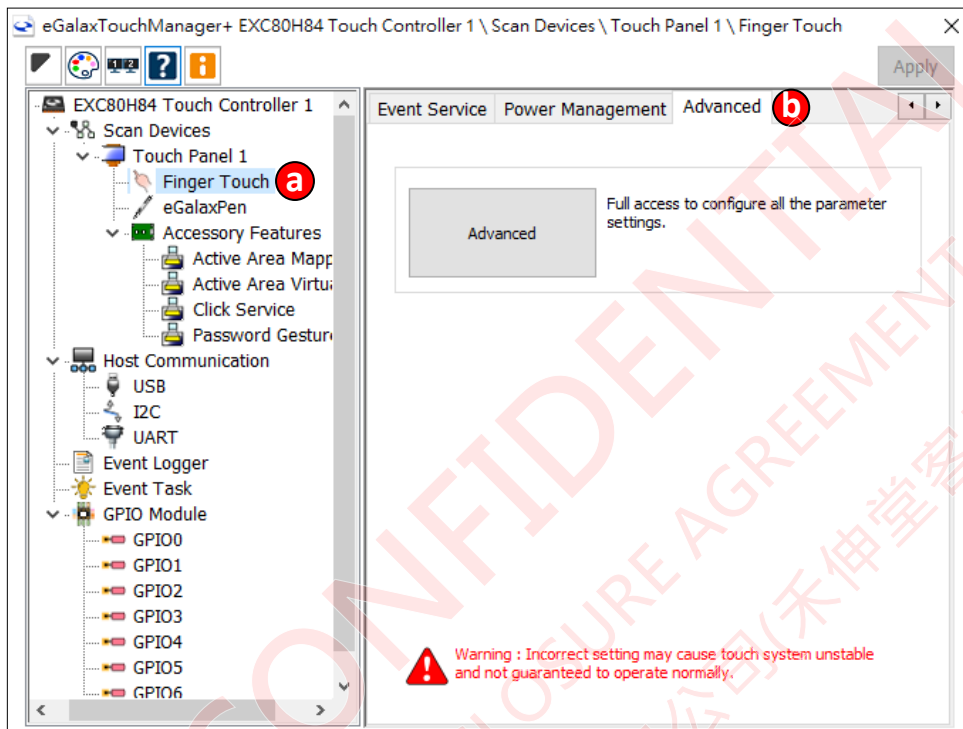
Power Setting



Power Sequence																																														
※ Description ※																																														
Delay between power on and enable HV. (ms)	The delay time from power on to enable HV corresponds to HV Enable Delay interval of the graph.																																													
Delay between enable HV and HV is ready. (ms)	The delay time from enable HV to HV is ready corresponds to HV Ready Delay interval of the graph.																																													
Delay between HV is ready and image baseline initialization. (ms)	The delay time from HV is ready to image baseline initialization corresponds to Get Baseline Delay interval of the graph.																																													
Power Voltage Detector																																														
Enable Power Voltage Detector	Enable Power Voltage Detector . If the voltage drops below the set value, the IC will be reset.																																													
Voltage Detect Level	<div>The Power Voltage Detector settings</div> <table><thead><tr><th>Level</th><th>EXC80x84/60</th><th>EXC80x46/32</th><th>EXC86H</th><th>EXC81x</th></tr></thead><tbody><tr><td>0</td><td>2.0 V</td><td>2.1 V</td><td>2.0 V</td><td>2.0 V</td></tr><tr><td>1</td><td>2.2 V</td><td>2.2 V</td><td>2.2 V</td><td>2.2 V</td></tr><tr><td>2</td><td>2.4 V</td><td>2.4 V</td><td>2.4 V</td><td>2.4 V</td></tr><tr><td>3</td><td>2.5 V</td><td>2.5 V</td><td>2.5 V</td><td>2.5 V</td></tr><tr><td>4</td><td>2.7 V</td><td>2.6 V</td><td>2.7 V</td><td>2.7 V</td></tr><tr><td>5</td><td>2.8 V</td><td>2.8 V</td><td>2.8 V</td><td>2.8 V</td></tr><tr><td>6</td><td>2.9 V</td><td>2.9 V</td><td>2.9 V</td><td>2.9 V</td></tr><tr><td>7</td><td>3.0 V</td><td>X</td><td>3.0 V</td><td>3.0 V</td></tr></tbody></table> <div>This table is the design specification and has not been tested in production.</div>	Level	EXC80x84/60	EXC80x46/32	EXC86H	EXC81x	0	2.0 V	2.1 V	2.0 V	2.0 V	1	2.2 V	2.2 V	2.2 V	2.2 V	2	2.4 V	2.4 V	2.4 V	2.4 V	3	2.5 V	2.5 V	2.5 V	2.5 V	4	2.7 V	2.6 V	2.7 V	2.7 V	5	2.8 V	2.8 V	2.8 V	2.8 V	6	2.9 V	2.9 V	2.9 V	2.9 V	7	3.0 V	X	3.0 V	3.0 V
Level	EXC80x84/60	EXC80x46/32	EXC86H	EXC81x																																										
0	2.0 V	2.1 V	2.0 V	2.0 V																																										
1	2.2 V	2.2 V	2.2 V	2.2 V																																										
2	2.4 V	2.4 V	2.4 V	2.4 V																																										
3	2.5 V	2.5 V	2.5 V	2.5 V																																										
4	2.7 V	2.6 V	2.7 V	2.7 V																																										
5	2.8 V	2.8 V	2.8 V	2.8 V																																										
6	2.9 V	2.9 V	2.9 V	2.9 V																																										
7	3.0 V	X	3.0 V	3.0 V																																										

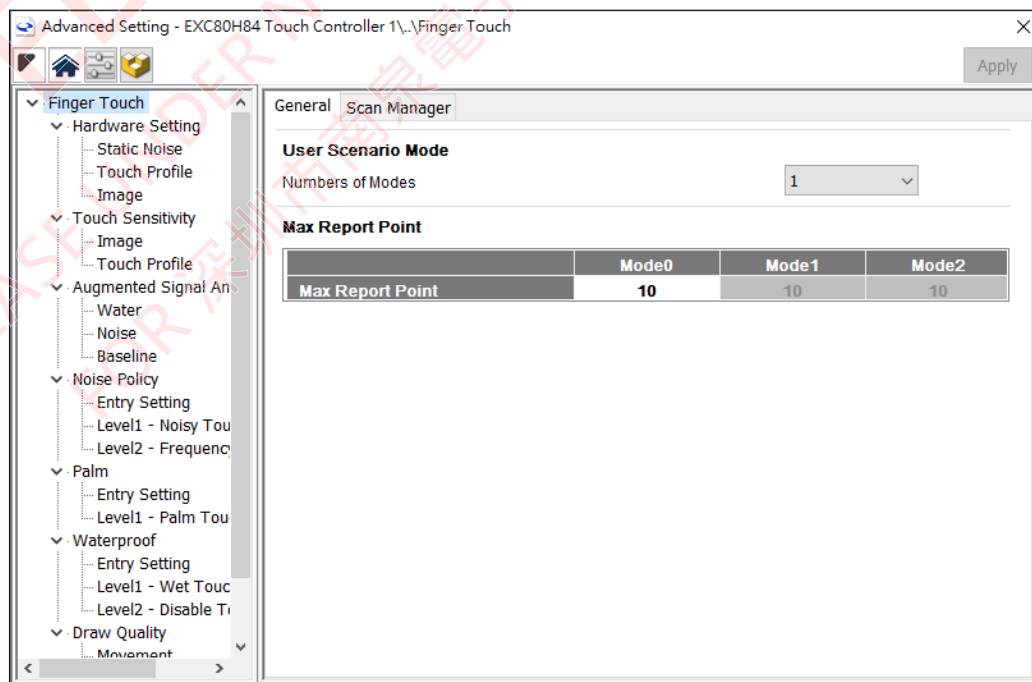
3.2. Finger Touch \ Advanced

Click on **Finger Touch** **a** and go to the far right of the right panel to find the **Advanced** **b** settings.



3.2.A. Finger Touch \

General



User Scenario Mode

Number of Modes

Different modes can be set for different scenarios.

Number of Modes allows you to select the number of modes in use. (Maximum number of supported user scenario modes: 5)

In the different parameter setting pages, you can view and adjust parameters for different modes, such as Sensitivity, Water-resistance, Static noise detection, Palm rejection, Anti-aliasing, etc.

Water Proof			
	Mode0	Mode1	Mode2
Enable Water Proof	OFF	ON	OFF

If the mode is disabled, the background will be grey.

Entry Threshold - Water Quantity Threshold			
Water Level	Mode0	Mode1	Mode2
Level1	200	200	200
Level2	Disable	Disable	Disable

For example, users can set up three different modes:

Mode0: Finger mode,

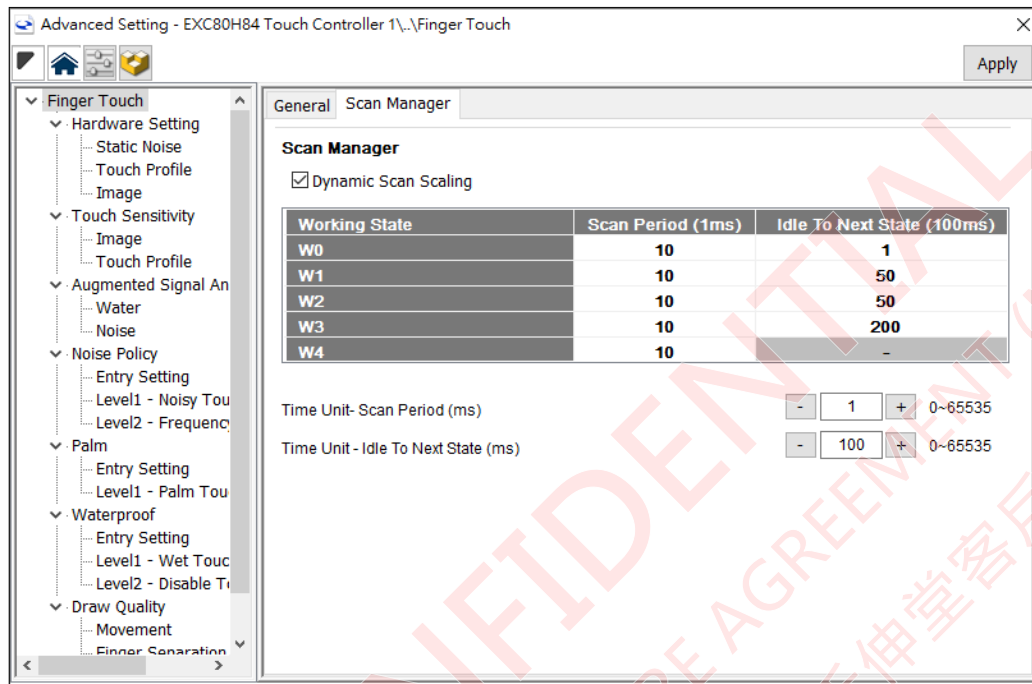
Mode1: Water-resistance mode.

Mode2: Glove mode.

Max Report Point

Max Report Point The maximum number of supported finger touches.

Scan Manager

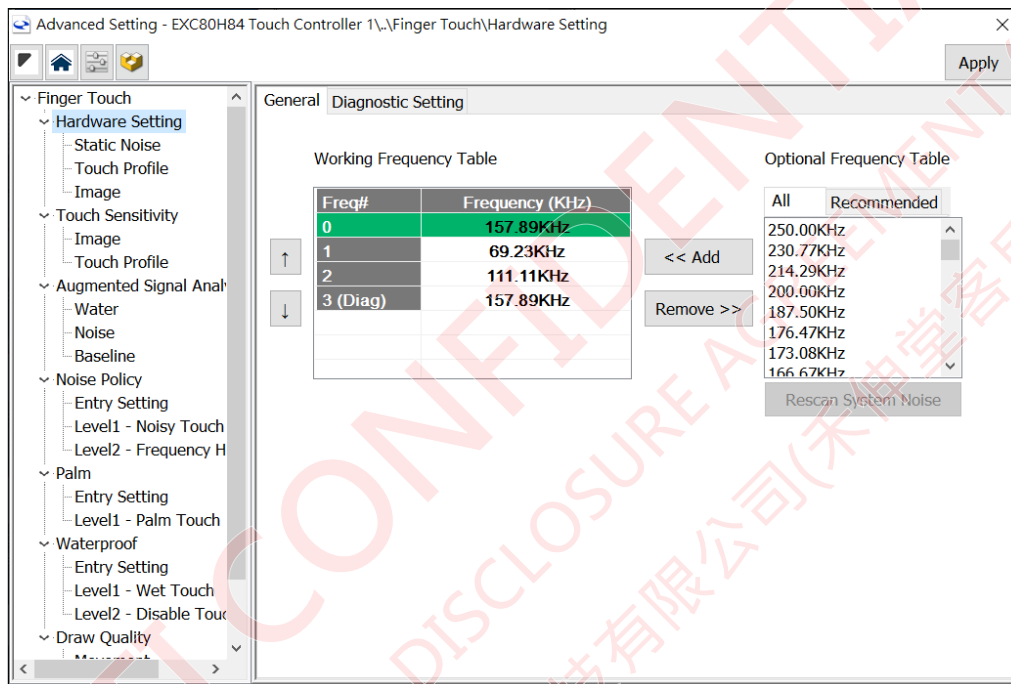


Scan Manager	
Dynamic Scan Scaling	Enable Dynamic Scan Scaling .
Working State	Working State is available from W0~W4 .
Scan Period	The period during every finger touch scan
Idle to Next State	The duration for staying in the current Working State
Time Unit – Scan Period (ms)	The time unit setting for Scan Period
Time Unit – Idle To Next State (ms)	The time unit setting for Idle to Next State
※ Description ※	Multi-Touch device is initially at W2 state. When the controller detects a finger touch, it will switch to W0 state. If the controller does not detect a finger touch within the Idle to Next State setting time, the device will switch to the next state (W1 state), and so on.

3.2.B. Finger Touch \ Hardware Setting

In this section, you can configure working frequency sets and adjust Scaling, RS, AFEGain, ADCGain, and MeasureCount to optimize and stabilize touch performance (Reference: [Finger Touch](#)).TM+ will automatically find the best configuration for the touch panel. In most cases, you do not need to configure it manually.

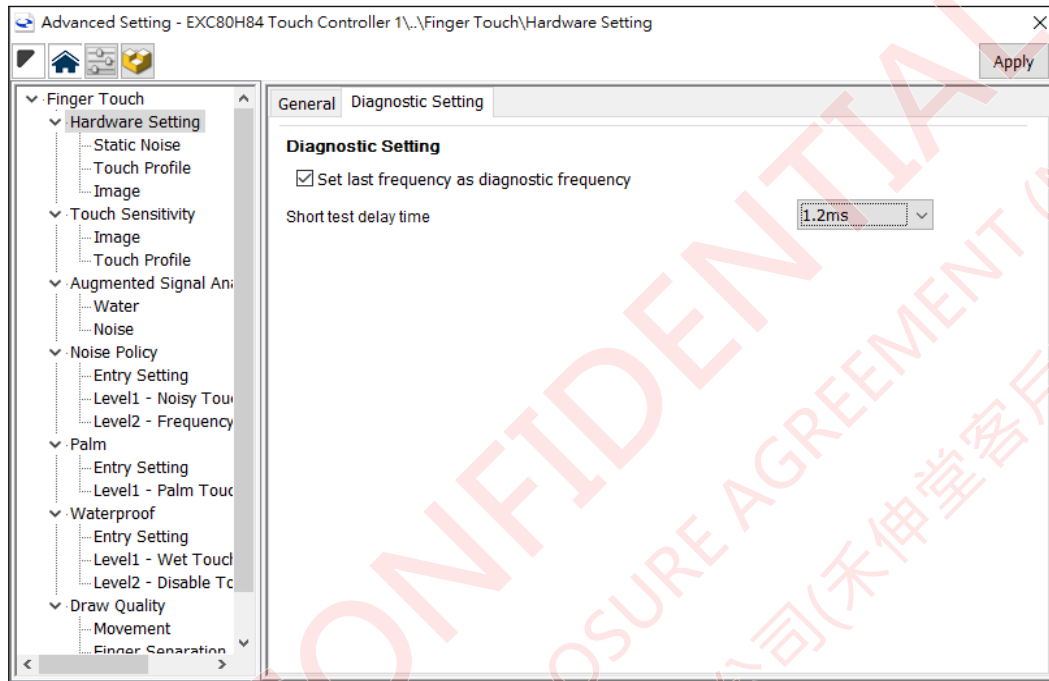
General



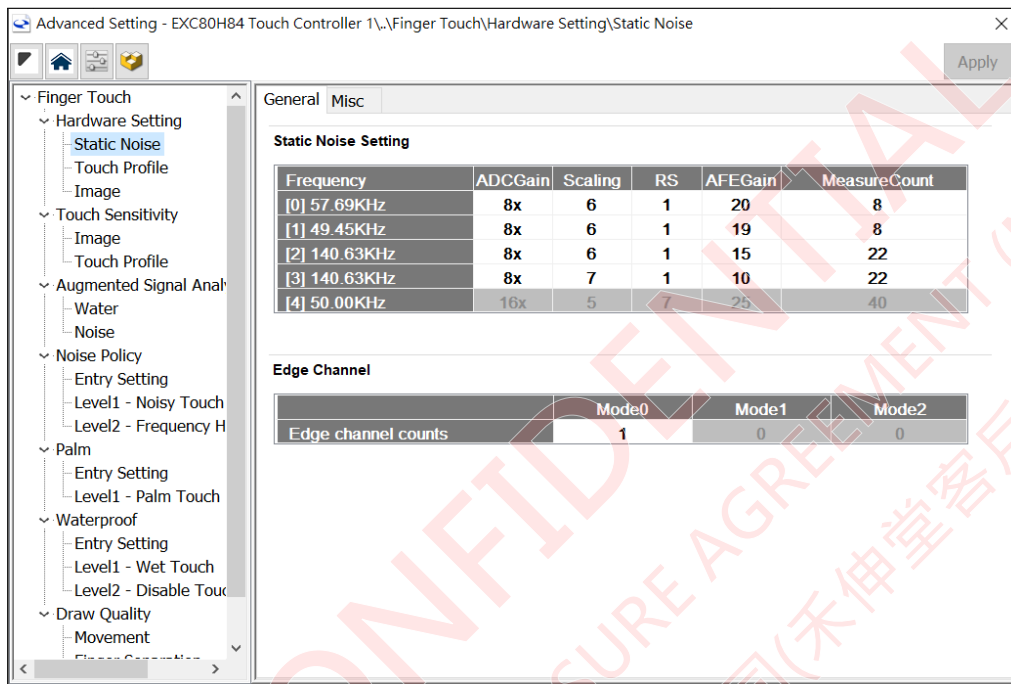
General	
Working Frequency Table	<p>The current working frequencies. (maximum supported number of frequencies: 5)</p> <p>You can change the order and the number of frequencies in use.</p>
Optional Frequency Table	<p>All: All available frequencies</p> <p>If any static noise exists, you can click on the Rescan System Noise button to receive new frequency recommendations on the Recommended page.</p>

Diagnostic Setting

By default, EETI controller will set the last working frequency as the diagnostic frequency. The diagnostic frequency will not be used in Frequency Hopping.

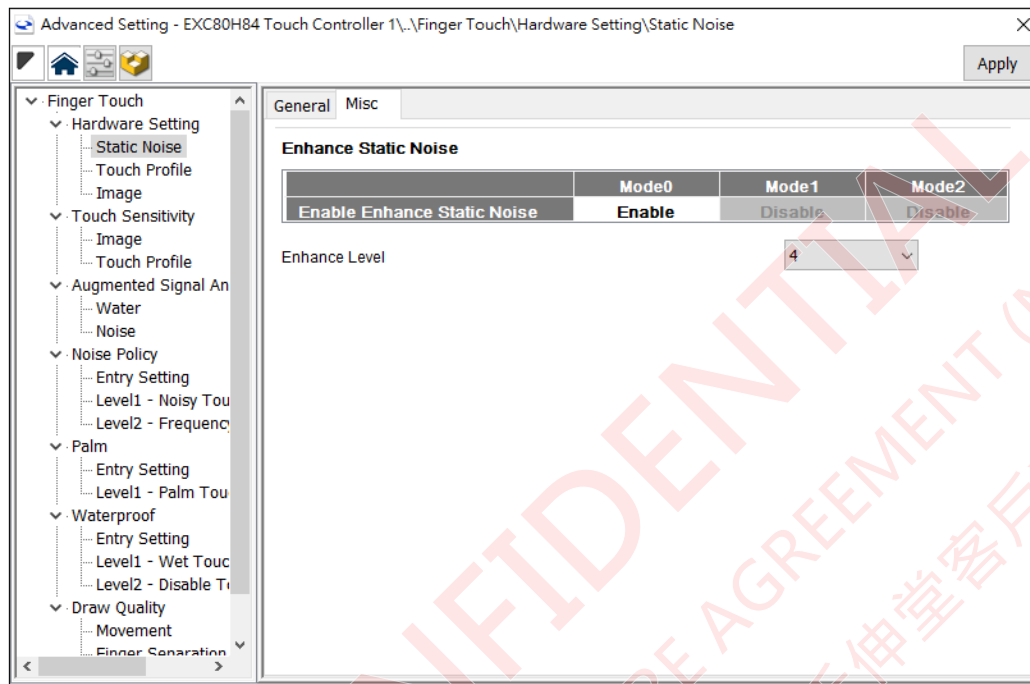


Diagnostic Setting	
Set last frequency as diagnostic frequency	The last frequency will be used for sensor tests only.
Short test delay time	<p>A touch panel with a high RC constant may lead to Sensor Short Test misjudgment. Increasing the Short test delay time will make the controller wait until the capacity is fully charged and reach a steady state before doing the Sensor Short Test. Increasing this parameter may prevent the Sensor Short Test misjudgment. (Unit: ms)</p> <p>WHEN TO USE: It can be used when a touch panel is not in a short circuit state but always fails the Sensor Short Test. Increasing this parameter may help to measure the state of the circuit correctly.</p>

i. **Hardware Setting \ Static Noise ****General**

Static Noise Setting	
Static Noise Setting	In Static Noise Settings , you can configure ADCGain , Scaling , RS , AFEGain , and MeasureCount for each frequency. (Reference: Finger Touch)
Edge Channel	
Edge channel counts	Configure the edge channels for Noise Policy \ Entry settings .

Misc



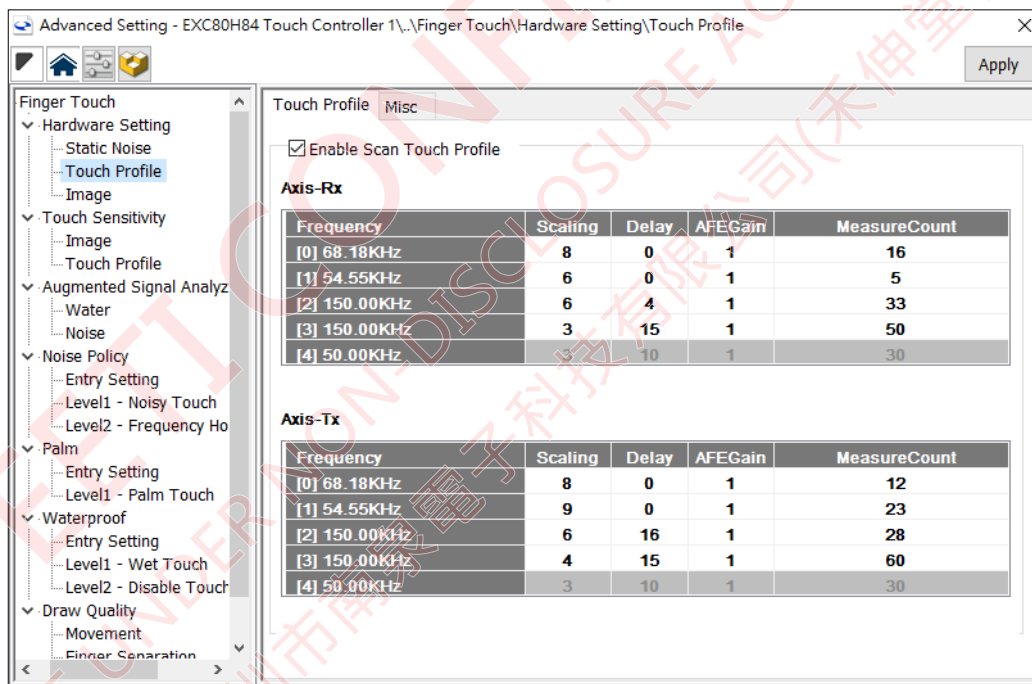
Enhance Static Noise	
Enable Enhance Static Noise	Enabling this feature can help detect Static Noise more steadily and correctly by strengthening the Static Noise scan and algorithmic process.
Enhance Level	Configure the level of Enhance Static Noise . The higher the parameter, the better the optimization. However, the side effect of setting this parameter high is that it will take more time to process.

ii. Hardware Setting \ Touch Profile \

The projection of the touch position onto the X and Y axis is called Touch Profile Rx (PR, as shown in the blue box) and Touch Profile Tx (PT, as shown in the orange box).

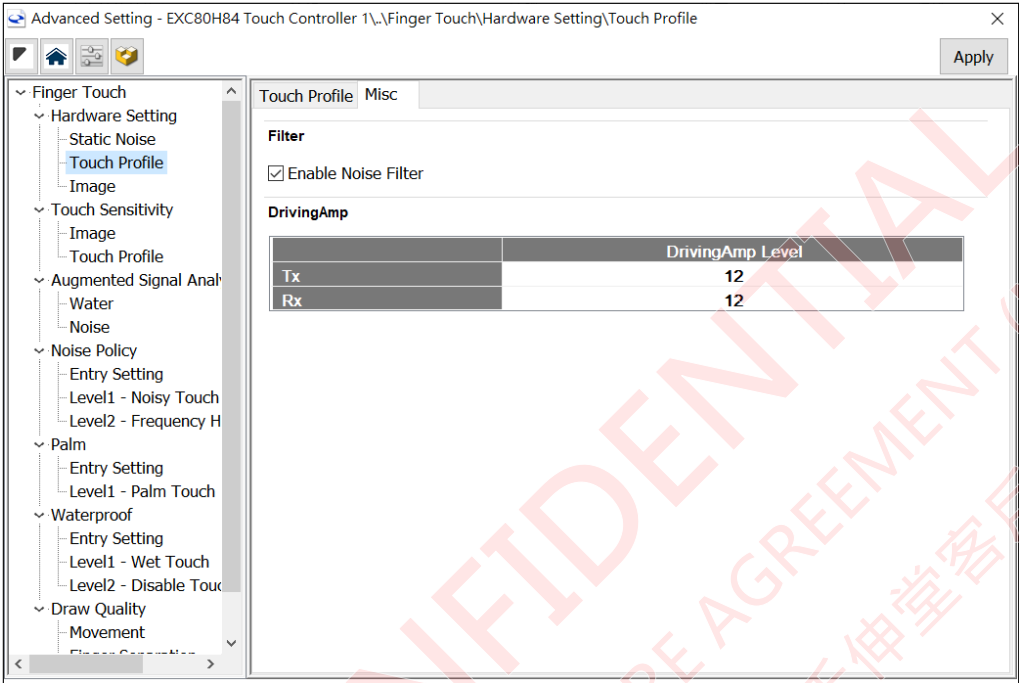
Touch Profile

Pin	PT	05	06	07	08	09	10	11	12	13	14	15	16	
N		0	3	3	1	3	4	2	3	1	1	2	1	2
PR		0	1	23	21	43	98	-95	-65	-18	-11	-1	2	-1
03		37	1	1	2	9	-4	-3	-2	-2	-1	-1	-2	
04		51	2	1	4	5	-2	-4	0	-4	-1	1	-3	
05		110	1	6	17	28	-19	-19	-7	-5	-2	0	-2	
06		52	7	18	89	173	-142	-113	-26	-5	-5	-1	-1	
07		-101	7	21	127	233	-208	-147	-27	-5	-6	-2	1	
08		-47	3	7	28	56	-52	-31	-7	0	-2	-2	-1	
09		-32	2	1	6	12	-11	-7	-1	-2	0	-1	-2	
10		-6	0	0	5	14	-12	-7	-1	-1	-3	0	-1	
11		-5	0	2	6	6	-6	-2	1	0	1	-2	1	
12		8	0	3	0	5	-4	0	-1	0	0	1	1	
13		6	1	0	5	10	-6	-4	-1	0	0	0	-1	
14		2	0	1	3	23	-8	-8	-1	-2	-2	1	-1	



Touch Profile	
Enable Scan Touch Profile	Enable the Touch Profile feature.
Axis-Rx	In Touch Profile Settings , you can configure ADCGain , Scaling , RS , AFEGain , and MeasureCount for each Axis-Rx and Axis-Tx . (Reference: Finger Touch)
Axis-Tx	

Misc



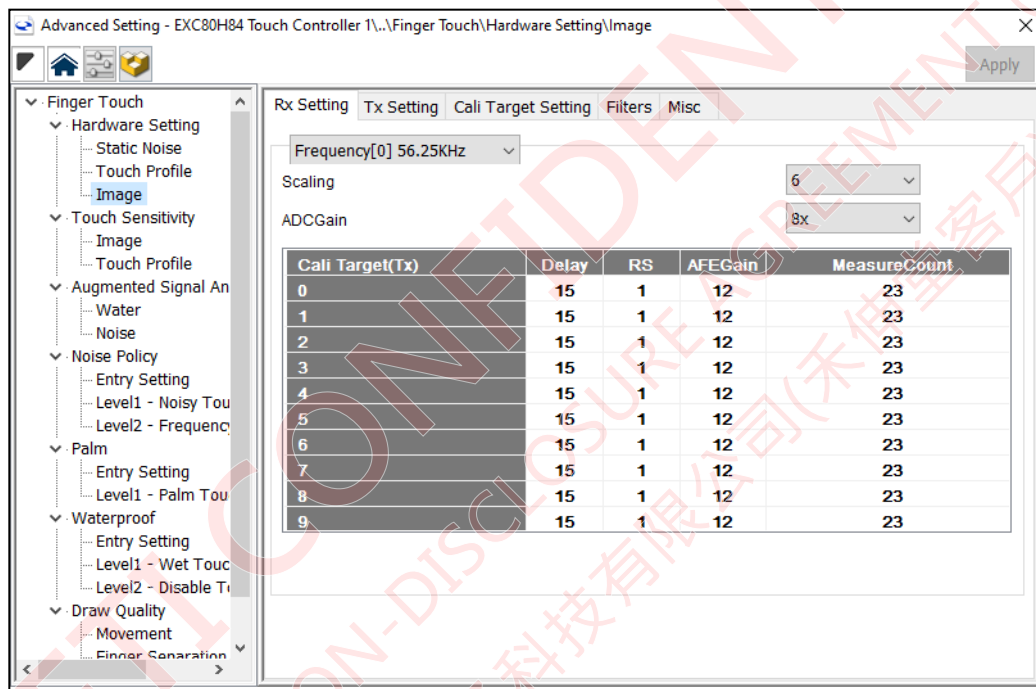
Filter	
Enable Noise Filter	Enable Touch Profile Noise Filter can help enhance the SNR of Touch Profile .
DrivingAmp	
DrivingAmp Level	The higher the DrivingAmp level, the higher the amplitude output (Default level: 12)

iii. Hardware Setting \ Image

A capacitance image is composed of mutual capacitance measured at the intersections of Tx and Rx

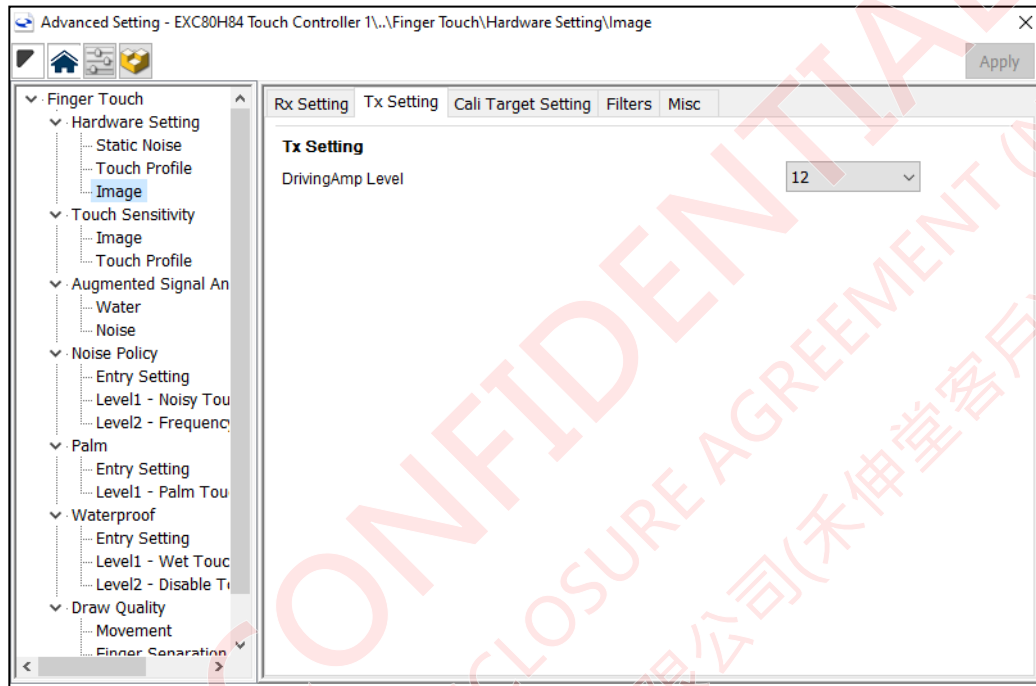
Rx Setting

Adjusting the **Scaling** and **ADCGain** parameters can modify the overall signal value. Changing **Delay**, **RS**, **AFEGain**, and **MeasureCount** parameters for different parts of the touch system (Tx channels) will modify that part of the signal value. (Reference: [Finger Touch](#))



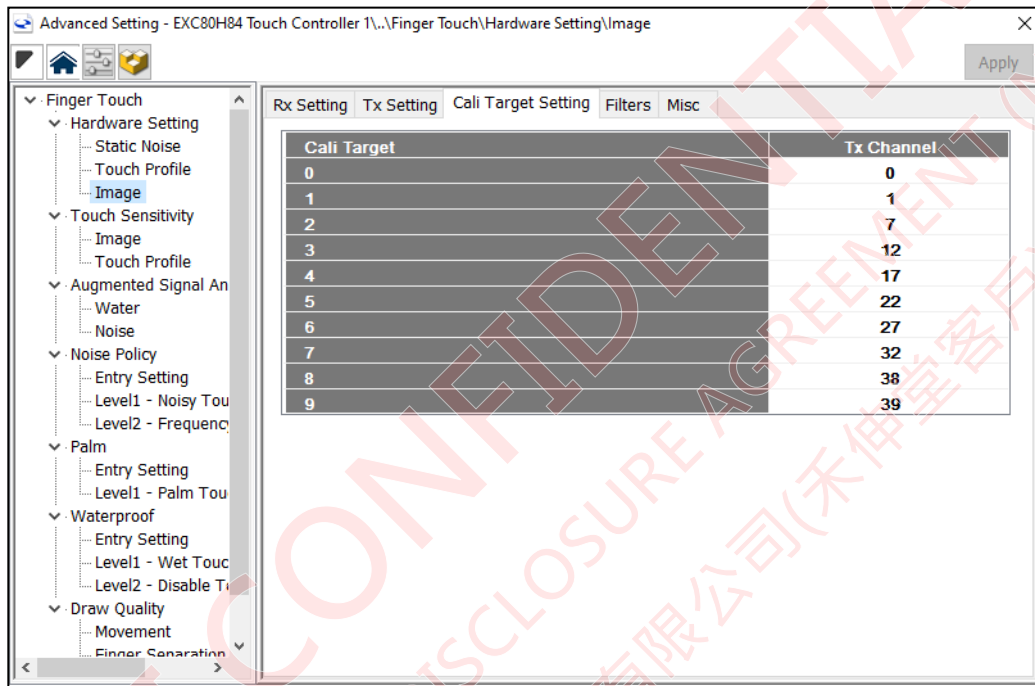
Tx Setting

Modifying DrivingAmp Level can change the signal amplifier level. The maximum DrivingAmp Level is 12, which will maximize the SNR. In some situations, decreasing DrivingAmp Level can reduce EMI interference.

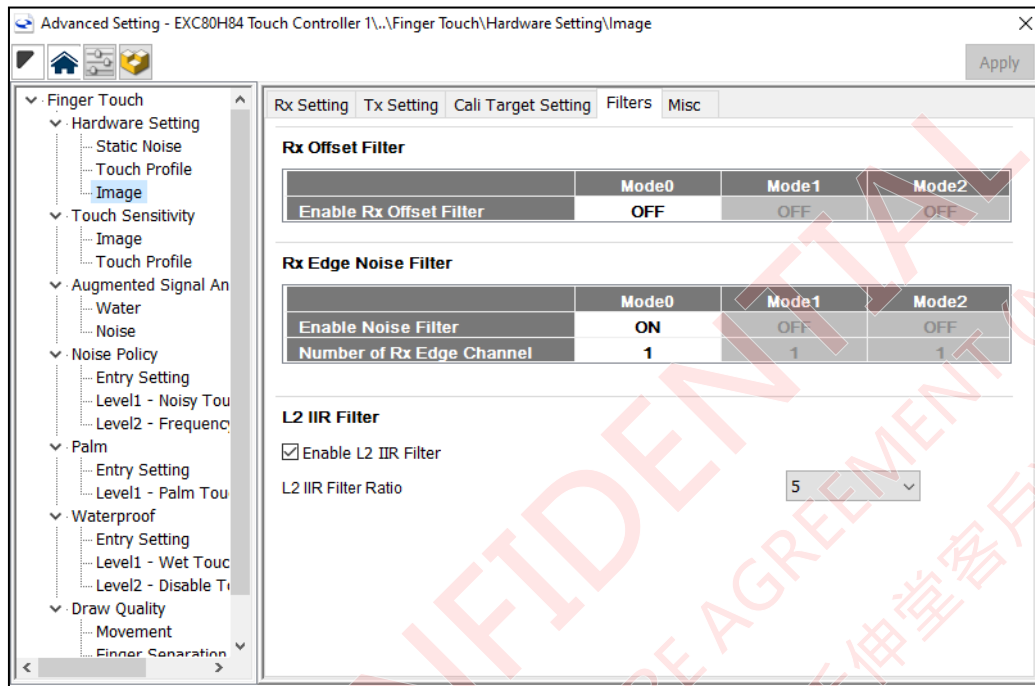


Cali Target Setting

After auto-learning, the location of the Cali Target channels will be distributed by average configuration by default. In some special cases, manually changing the Cali Target channels location can optimize the signal performance.

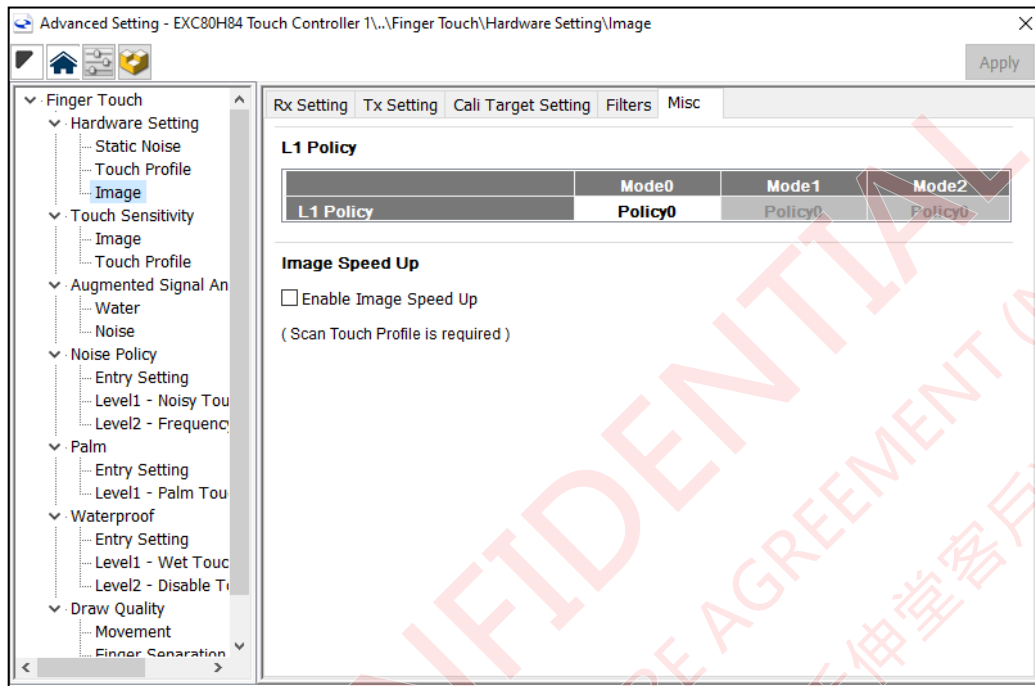


Filters



Rx Offset Filter	
Enable Rx Offset Filter	Filter out the signal offset on the Rx channel. ※ Enabling this function may decrease the reporting rate.
Rx Edge Noise Filter	
Enable Noise Filter	Enhance the noise immunity on edge channels, which are sometimes more susceptible to noises than other channels.
Number of Rx Edge Channel	Set the number of edge channels applied to Enable Noise Filter . ※ Enabling this function may decrease the reporting rate.
L2 IIR Filter	
Enable L2 IIR Filter	Enable feature of the L2 IIR Filter .
L2 IIR Filter Ratio	If you increase the L2 IIR Filter Ratio , the strength of correction will also increase. However, a higher L2 IIR Filter Ratio leads to a lower reporting rate. This filter is designed for a high noise environment.

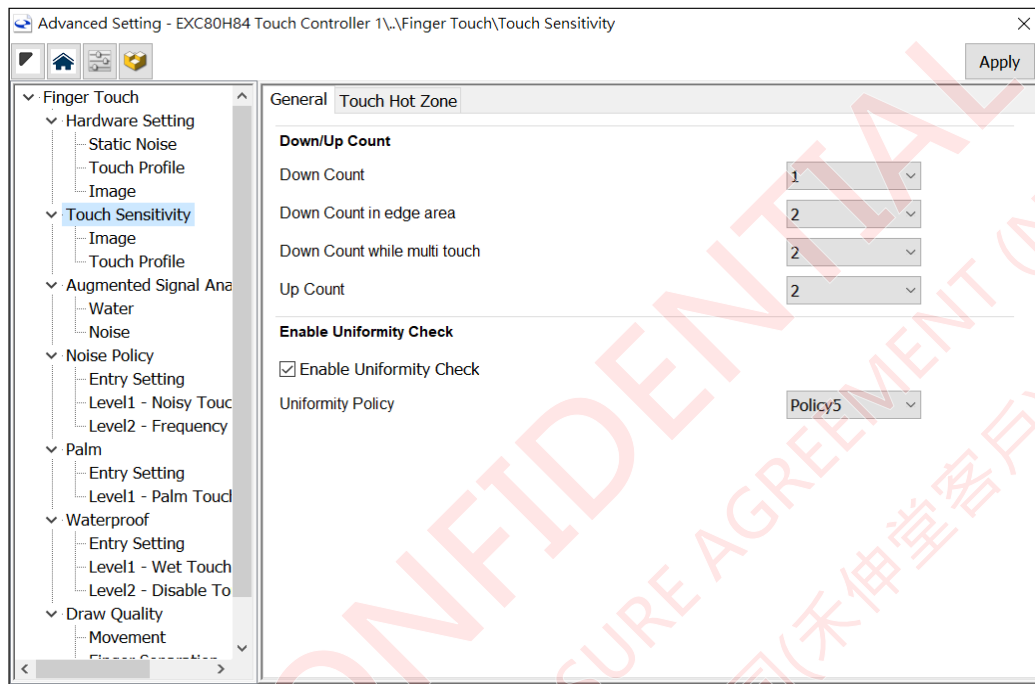
Misc



L1 Policy	
L1 Policy	<p>L1 signal processing strategy.</p> <p>WHEN TO USE: Generally, we will not change L1 Policy. If any unexpected issue occurs, please get in touch with EETI for a tuning recommendation.</p>
Image Speed Up	
Enable Image Speed Up	<p>After enabling this feature, Touch Profile will be used to speed up the scanning rate.</p> <p>WHEN TO USE: When the excessive Tx channels lead to a poor reporting rate, enabling this feature can increase the reporting rate.</p> <p>※ The drawback of enabling this feature is that users might experience line drops when drawing at high speed.</p>

3.2.C. Finger Touch \ Touch Sensitivity

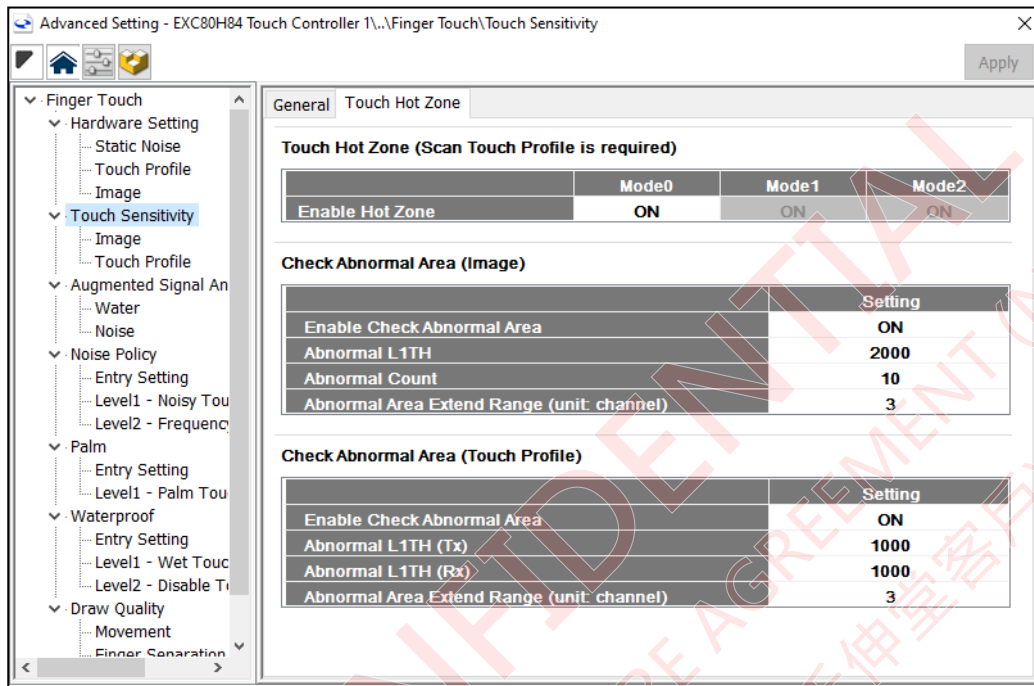
General



Down/Up Count	
Down Count	<p>During first-down finger touch, if the number of valid frames exceeds Down Count, the Down touch event will be reported to the host system.</p> <p>WHEN TO USE: Decreasing this parameter can reduce the first-down latency. Increasing this parameter can avoid false touch from unexpected spike noise.</p>
Down Count in edge area	<p>In the edge area, the Down Count of the valid frames of touches will be increased by Down Count in edge area. If the number of valid frames exceeds Down Count, a Down event will be reported to the host system.</p>
Down Count while multi touch	<p>If the number of valid touches is more than one and the finger is not the first touch, the Down Count of the valid frames of touches will be increased by Down Count while multi touch.</p> <p>If the number of valid frames exceeds Down Count, a Down event will be reported to the host system.</p>
Up Count	<p>For each finger touch, if the number of invalid frames of the corresponding finger touch exceeds Up Count, the UP event will be reported to the host system.</p> <p>WHEN TO USE: Increase this parameter if lines drop or break too often. Decrease this parameter if touch points form into lines during quick tapping.</p>

Enable Uniformity Check	
Enable Uniformity Check	Enable system calibration table, which is used for baseline check and recovery.
Uniformity Policy	Select Uniformity Policy . WHEN TO USE: Normally, we will not change the Uniformity Policy . If any unexpected issue occurs, EETI RD will recommend the strategies for change.

Touch Hot Zone.

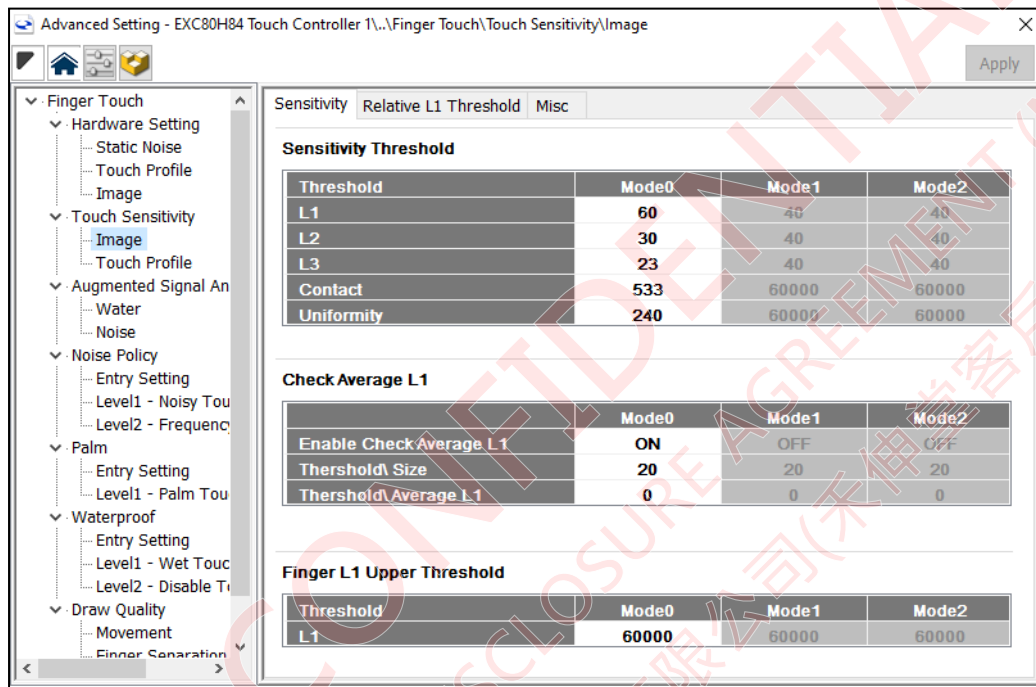


Touch Hot Zone (Scan Touch Profile is required)	
Enable Hot Zone	Enable Hot Zone.
Check Abnormal Area (Image)	
Enable Check Abnormal Area	Enable Check Abnormal Area of Image . After this feature is enabled, any touch signal within the Abnormal Area of Image will be invalid.
Abnormal L1TH	If the L1 signal exceeds Abnormal L1TH and the number of abnormal signal counts exceeds Abnormal Count , this area is an Abnormal Area of Image .
Abnormal Count	
Abnormal Area Extend Range (Unit: channel)	The range of protected areas extends from the Abnormal Area of Image . (Unit: Channel)
Check Abnormal Area (Touch Profile)	
Enable Check Abnormal Area	Enable Check Abnormal Area of Touch Profile . After enabling this feature, any touch signal within the Abnormal Area of Touch Profile will be invalid.
Abnormal L1TH(Tx)	If the L1 signal on PT/PR exceeds Abnormal L1TH(Tx) / Abnormal L1TH(Rx) , this area is an Abnormal Area of Touch Profile .
Abnormal L1TH(Rx)	
Abnormal Area Extend Range (Unit: channel)	The range of protected areas extends from the Abnormal Area of Touch Profile . (Unit: Channel)

i. Touch Sensitivity \ Image

Sensitivity

Sensitivity is a set of thresholds for reporting a valid finger touch. Every signal should pass its corresponding threshold.



※ Ways that make the four central numbers to be close to each other:

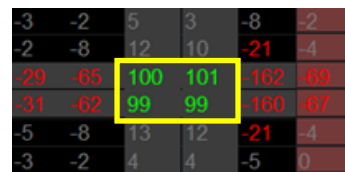
L1 signal



L2 signal (Positive)

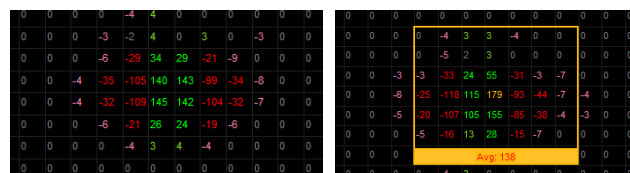


L3 signal

**Sensitivity Threshold**

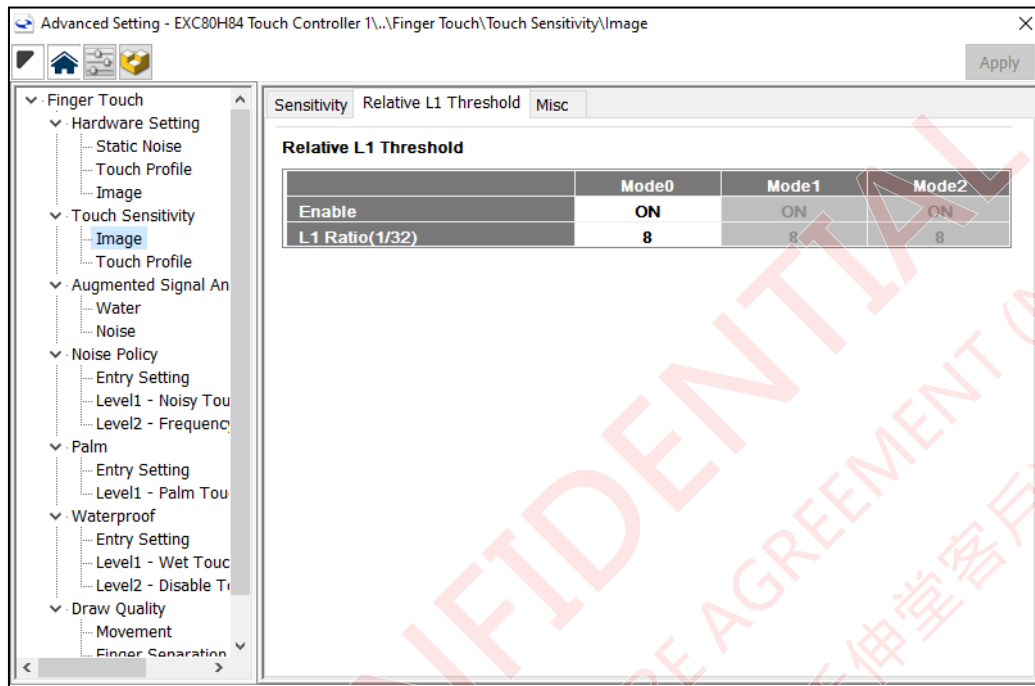
※ Description ※

Use **eGalaxTuner** to find the average value of the Image signal. Move the finger slightly until the four central numbers are close to each other, and then calculate the average value. You can also enable **ShowCell** from the auxiliary function bar to get the average value.



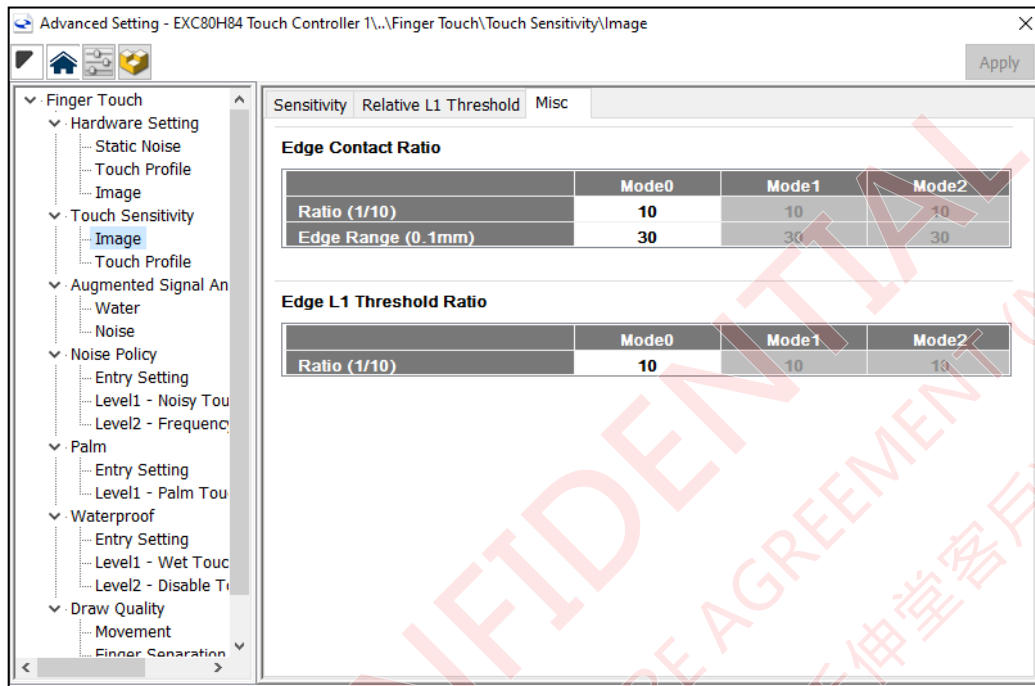
Sensitivity Threshold	
L1	The suggested L1 threshold is 50% of the average value. You can adjust this threshold to optimize touch sensitivity.
L2	The suggested L2 threshold is 50% of the average value. You can adjust this threshold to optimize touch sensitivity.
L3	The suggested L3 threshold is 50% of the average value. You can adjust this threshold to optimize touch sensitivity.
Contact	Please refer to eGalaxTuner\Draw Test\ Touch Information to see how to set the Contact finger threshold. On the screen, please press your finger with regular contact pressure. The suggested Contact threshold is 50% of the Contact value. You can adjust this threshold to optimize touch sensitivity.
Uniformity	The suggested Uniformity Cook is 50% of the average value.
Check Average L1	
Enable Check Average L1	Enable the feature of Check Average L1 .
Threshold\ Size	If the contact area exceeds Threshold\ Size but its L1 average signal is less than Threshold\ Average L1 , the touch signal within the contact area is invalid.
Threshold\ Average L1	
Finger L1 Upper Threshold	
L1	Any finger touch signal exceeds Finger L1 Upper Threshold is invalid.

Relative L1 Threshold



Relative L1 Threshold	
Enable Relative L1 Threshold	If enabled, a new threshold relative to the signal of finger input may be applied to the controller to increase the touch performance stability.
L1 Ratio(1/32)	<p>L1 Ratio(1/32) will be used to calculate Relative L1 Threshold. (i.e. $C_{Max} \times \frac{L1\ Ratio}{32}$)</p> <p>The higher threshold within L1 Threshold and the Relative L1 Threshold will be used to determine the touch signal.</p> <p>WHEN TO USE: To stabilize the touch performance in a high sensitivity setting.</p> <p>※ If the touch screen does NOT have uniform signal strength across the surface, line drop may occur in the area with a weaker signal.</p>

Misc



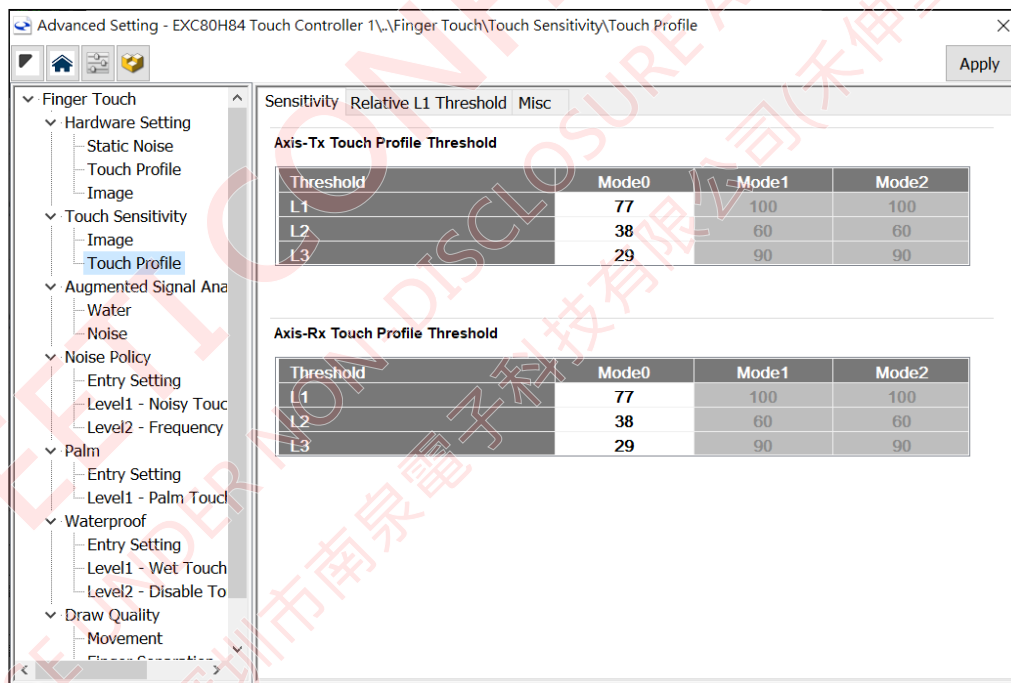
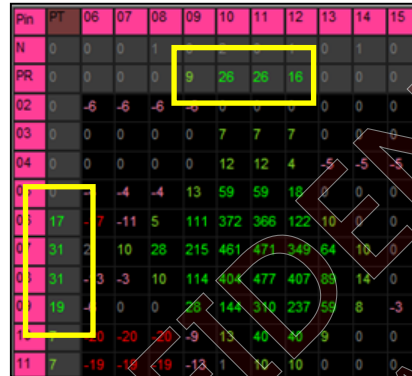
Edge Contact Ratio	
Ratio (1/10)	The Contact signal threshold ratio for touches on edge.
Edge Range(0.1mm)	The Edge Range setting
Edge L1 Threshold Ratio	
Ratio(1/10)	The L1 signal threshold ratio for touches on edge.

ii. Touch Sensitivity \ Touch Profile

Sensitivity

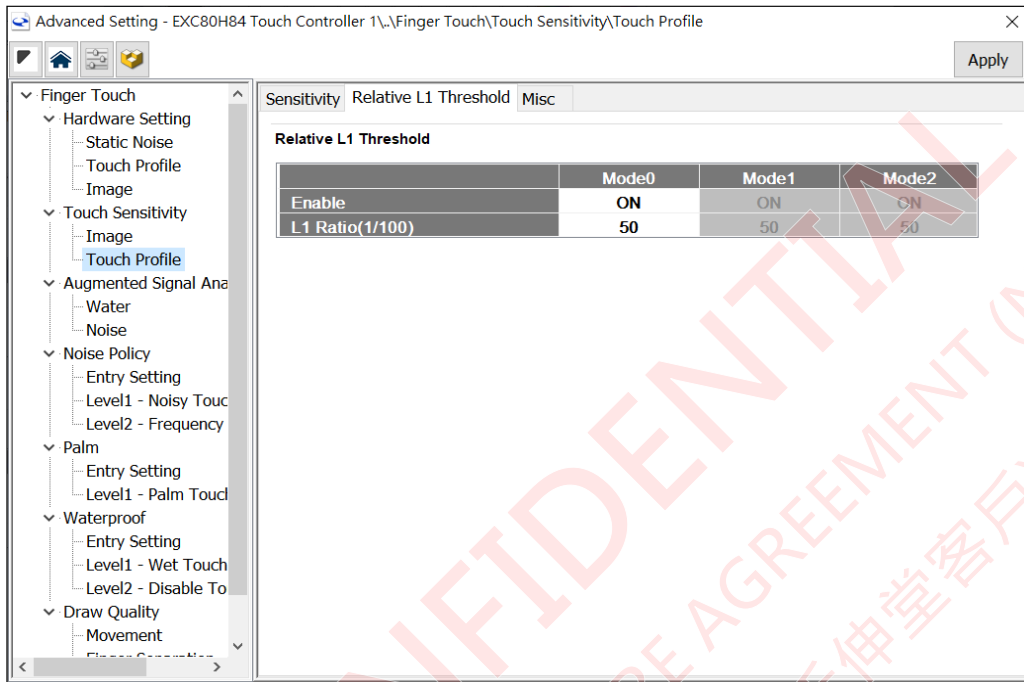
On this page, you can configure PT and PR threshold for each user scenario mode. This section is only valid when [Scan Touch Profile](#) is enabled.

※ When reading PT/PR signal, please slightly move the finger position until two central numbers are close to each other and then calculate the average value.



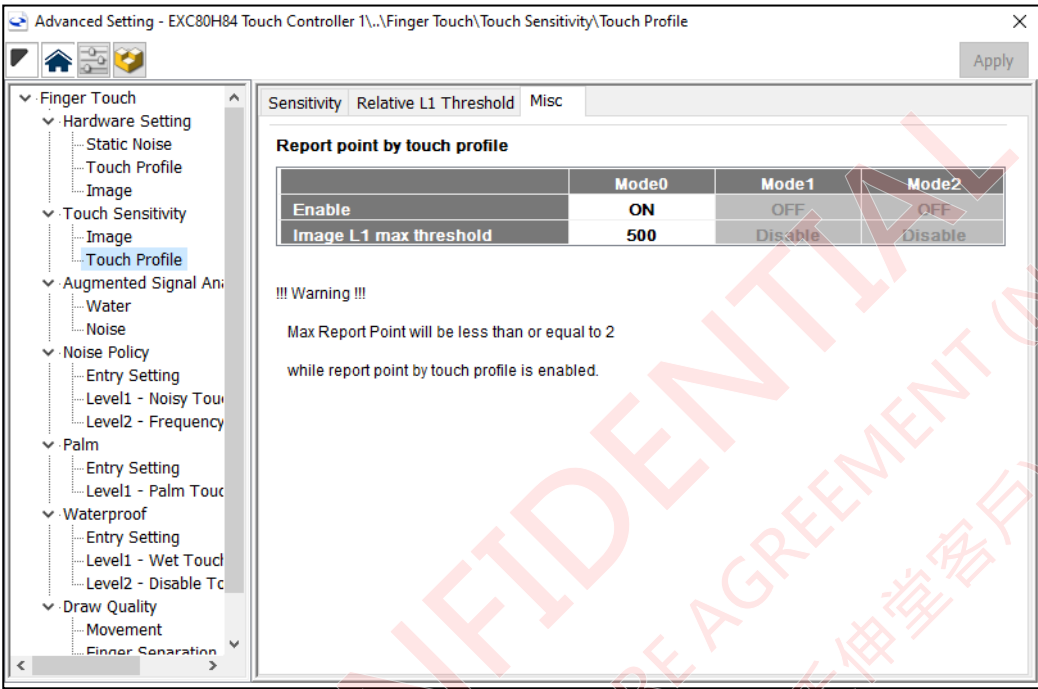
Axis-Tx/Rx Touch Profile Threshold	
L1	The suggested L1 threshold is 50% of the average value. You can adjust this threshold to optimize touch sensitivity.
L2	The suggested L2 threshold is 50% of the average value. You can adjust this threshold to optimize touch sensitivity.
L3	The suggested L3 threshold is 50% of the average value. You can adjust this threshold to optimize touch sensitivity.

Relative L1 Threshold



Relative L1 Threshold	
Enable	A new threshold relative to the signal of PT/PR L1 input may be apply to the original Threshold-L1 to increase the touch performance stability.
L1 Ratio(1/100)	The new L1 threshold is the current maximum PT/PR L1 multiplied by L1 Ratio(1/100) . Within the new L1 threshold and the origin L1 threshold, whichever has a higher threshold value will be used as the L1 threshold.

Misc



Report point by touch profile	
Enable	Enable the feature of using Touch Profile to calculate reporting points.
Image L1 max threshold	Any L1 Image signal that exceeds Image L1 max threshold will be ignored.

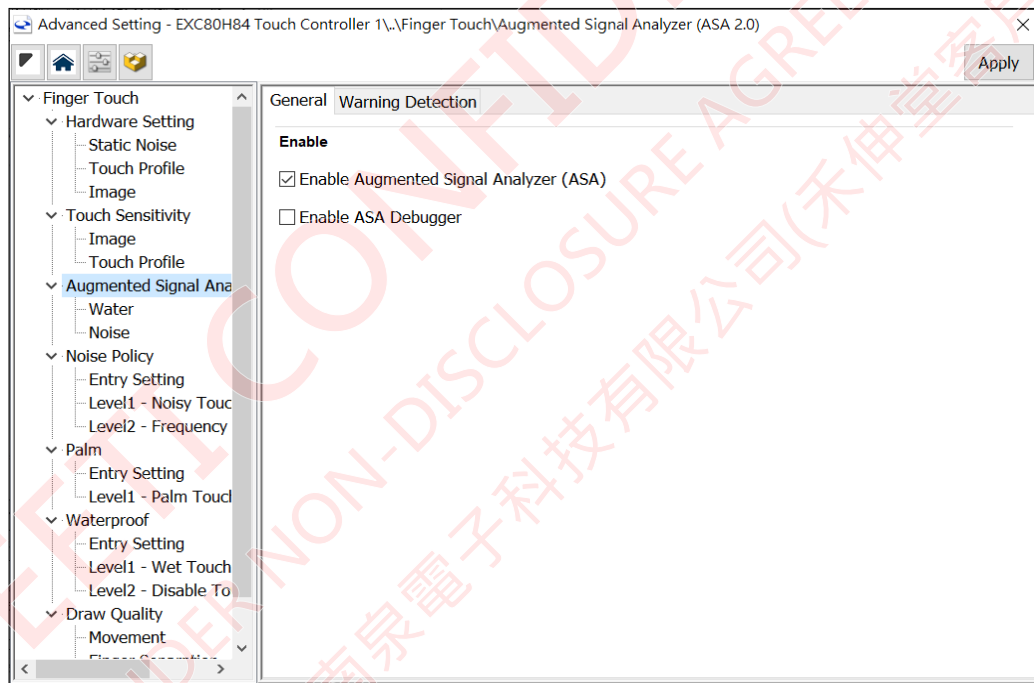
3.2.D. Finger Touch \ Augmented Signal Analyzer (ASA 2.0)

Augmented Signal Analyzer (ASA) is a new powerful feature in the Orion family touch controller. It is designed for accurately differentiating the unique signal pattern formed in various scenarios, such as water on the touchscreen surface, electrical noise from the environment, etc. **ASA** reduces the overall complexity of manually tuning for water resistance and noise immunity. It simplifies the whole firmware tuning process.

Notice:

ASA is a brand-new feature from the EETI Orion touch solution. When you enable **ASA**, some previous features may conflict with ASA. In this case, you will need to disable the conflict features to stabilize the touch performance.

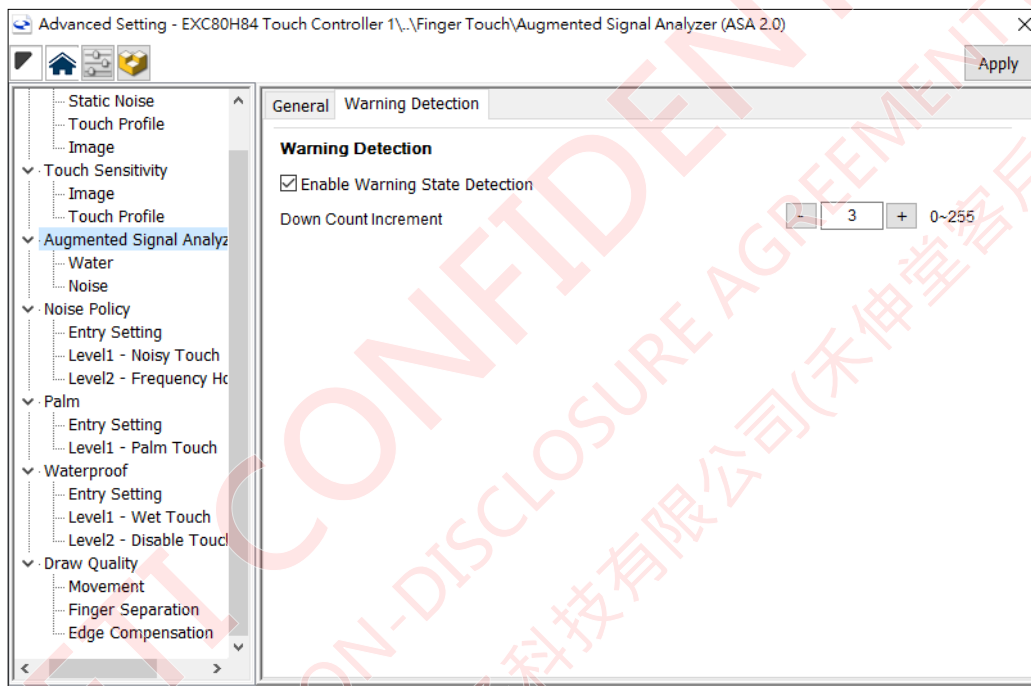
General



Enable	
Enable ASA	Enable Augmented Signal Analyzer (ASA) feature.
Enable ASA Debugger	Enable ASA Debug feature. The debug Info will be shown in Firmware Status Window .

Warning Detection

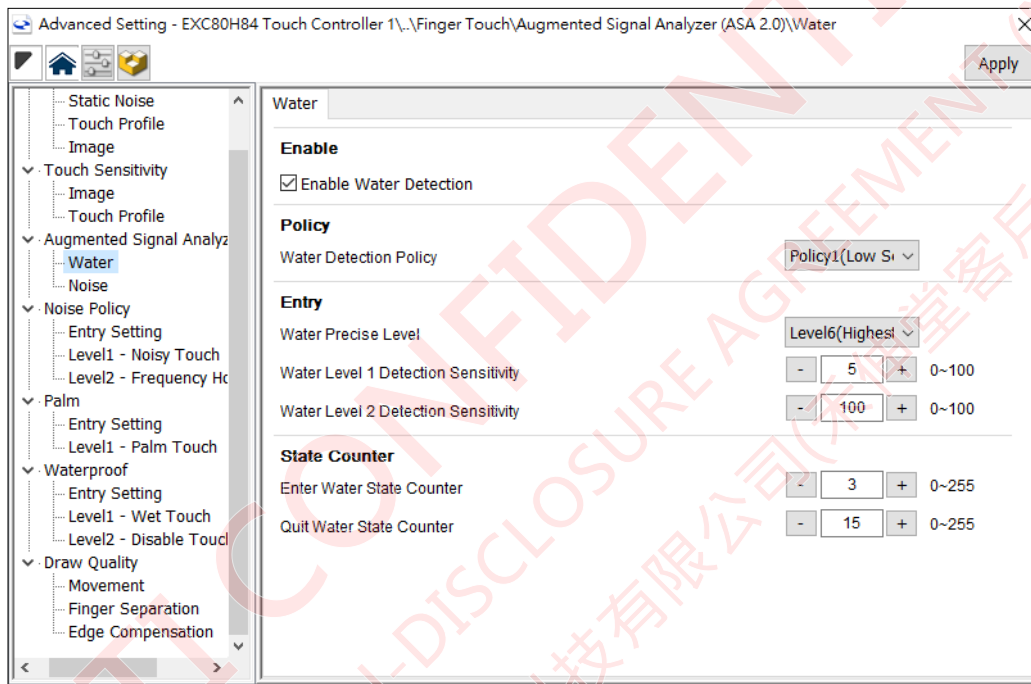
When suspicious water or noise is detected, the controller will enter **Warning State**. To stabilize the touch performance, the controller will increase **Down Count** in **Warning State**. That is to say, in the **Warning State**, triggering the **Down event** needs more numbers of valid touch frames.



Warning Detection	
Enable Warning State Detection	Enable ASA Warning State Detection .
Down Count Increment	The extra Down Count Increment will be added to Down Count when the controller is in ASA Warning State .

i. **ASA \ Water****Water**

The signal pattern analyzed by ASA can help determine if the controller needs to enter the **Waterproof** state. An accurate switching between different modes helps stabilize the touch performance when drawing while water is on the touchscreen surface.



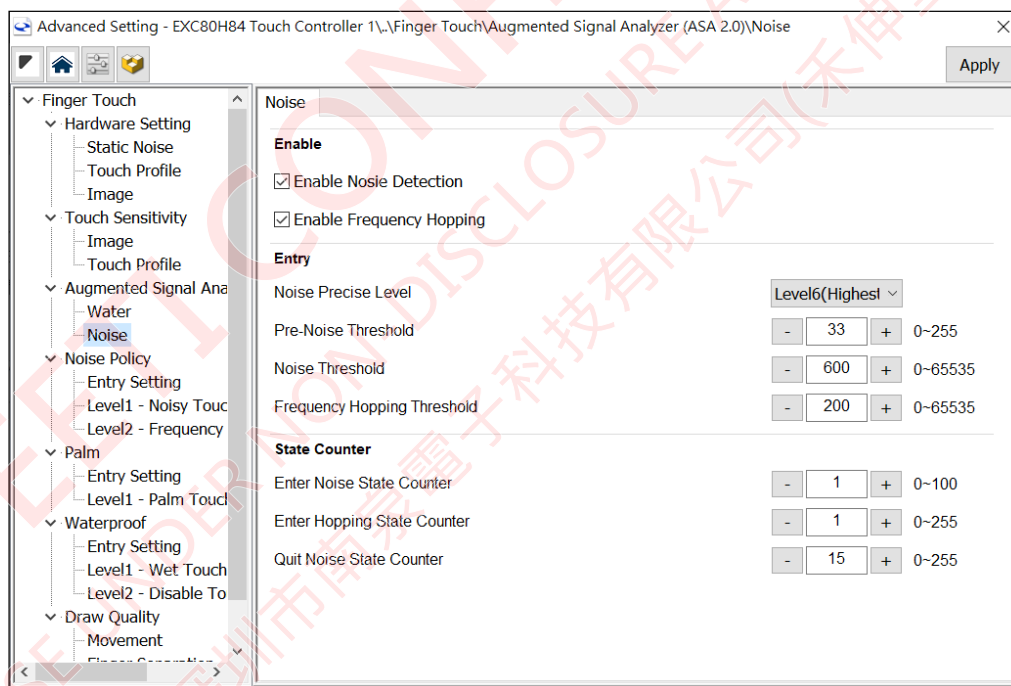
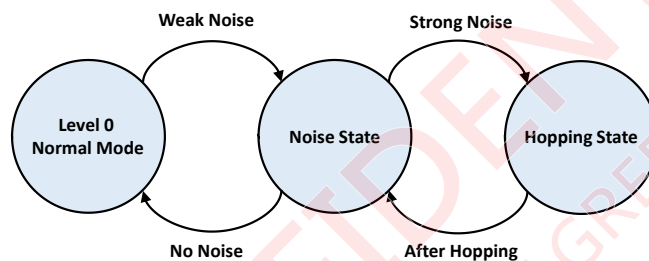
Enable	
Enable water detection	Enable ASA water detection feature. Palm Rejection should be enabled at the same time.
Policy	
Water Detection Policy	Water Detection Policy can detect if any touch signal is caused by water. You can select different policies to adjust the detection sensitivity.
Entry	
Water Precise Level	The confidence threshold of the water signal Level 1 has a lower sensitivity to water, and Level 6 has a higher sensitivity to water. The higher the Water Precise Level, the higher risk of reporting a false water detection.

Water Level 1 Detection Sensitivity	<p>The sensitivity of entering a Waterproof State</p> <p>The lower the Water Level 1 Detection Sensitivity, the more sensitive the controller will enter a Waterproof State.</p>
Water Level 2 Detection Sensitivity	<p>The sensitivity of entering Water Disable</p> <p>The lower the Water Level 2 Detection Sensitivity, the more sensitive the controller will enter Water Disable.</p> <p>The default parameter for Water Level 2 Detection Sensitivity is 100, which means that, by default, the controller will not enter Water Disable.</p>
State Counter	
Enter water state counter	<p>When the signal with water is large enough while the number of valid scans with water exceeds Enter water state counter, the controller will enter Waterproof State checking mode.</p>
Quit water state counter	<p>The stable counter before quitting Waterproof State</p>

ii. ASA \ Noise

Noise

The signal pattern analyzed by ASA will determine whether the controller enters the anti-noise mode. An accurate switching between different modes will help stabilize the touch performance in the static noise environment. If the anti-noise mode cannot mitigate the noise impact, the controller will do frequency hopping to avoid noise interference.



Enable	
Enable Noise Detection	Enable ASA Noise Detection feature.
Enable Frequency Hopping	Enable ASA Frequency Hopping feature.
Note	※ ASA-Noise conflicts with Image Check Noise Please disable Image Check Noise when enabling ASA-Noise detection.

Entry	
Noise Precise Level	The confidence threshold of the noise signal Level 1 has a lower sensitivity to noise, and Level 6 has a higher sensitivity. The higher the Noise Precise Level , the higher risk of misjudging a false noise state.
Pre-Noise Threshold	Static Noise Threshold for trigger ASA 2.0 Noise Detection
Noise Threshold	The sensitivity of entering Noise Condition The higher the Noise Threshold , the more sensitive the controller will enter Noise Condition . The default parameter for Noise Threshold is 600, which means that, by default, the controller will enter anti-noise mode when SNR is less than 6.
Frequency Hopping Threshold	The sensitivity of doing Frequency Hopping The higher the Frequency Hopping Threshold , the more sensitive the controller will do Frequency Hopping . The default parameter for Frequency Hopping Threshold is 200, which means that, by default, the controller will do Frequency Hopping when SNR is less than 2.
State Counter	
Enter Noise State Counter	When the signal with noise is large enough, and the number of valid scans with noise exceeds Enter Noise State Counter , the controller will enter Noise Condition .
Enter Hopping State Counter	When the signal with noise is large enough, and the number of valid scans with noise exceeds Enter Hopping State Counter , the controller will do Frequency Hopping .
Quit Noise State Counter	The stable counter before quitting Noise Condition

3.2.E. Finger Touch \ Noise Policy

EETI touch controller will automatically detect the environmental noises and switch to a different level of anti-noise modes to mitigate the interference.

Level0 - Normal mode:

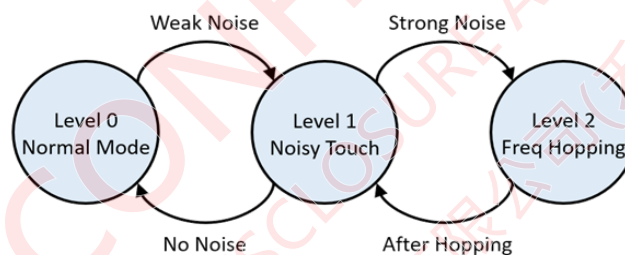
In a normal situation, the controller will stay in this state.

Level1 - Noisy Touch:

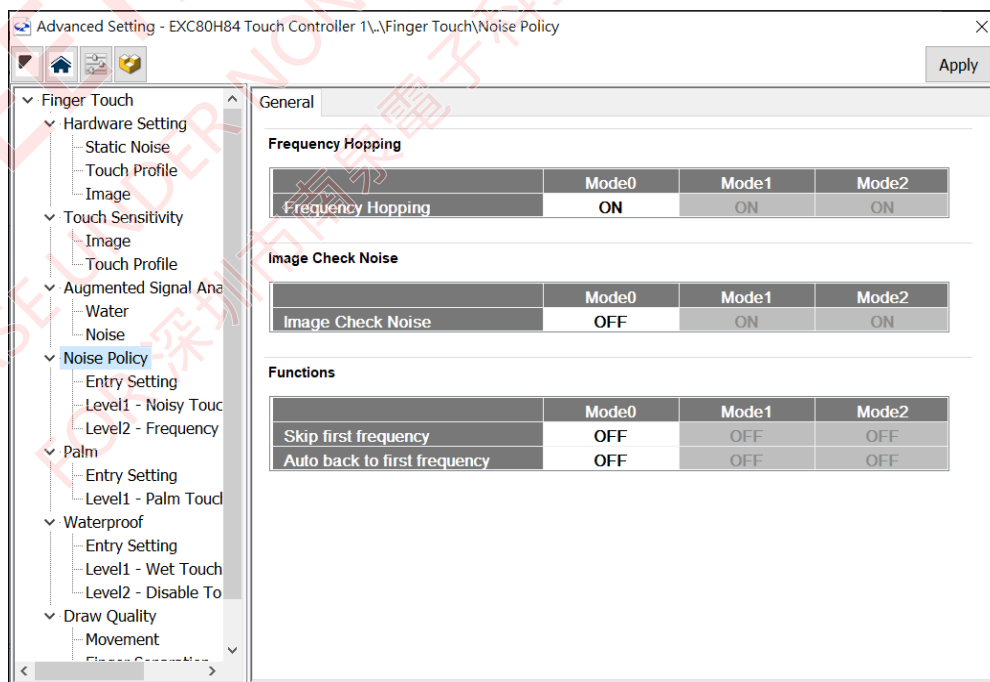
If the environmental noises become high enough to fulfill the criterion of entering Level I, the controller will enter the “Level1-Noisy Touch” state. To stabilize the touch performance, the controller will automatically adjust sensitivity and other related settings.

Level2 - Frequency Hopping:

If the environmental noises become extremely high that **Level1 - Noisy Touch** cannot mitigate the interference and the criterion of entering **Level2 - Frequency Hopping** is fulfilled, the controller will do **Frequency Hopping** to avoid noise interference.



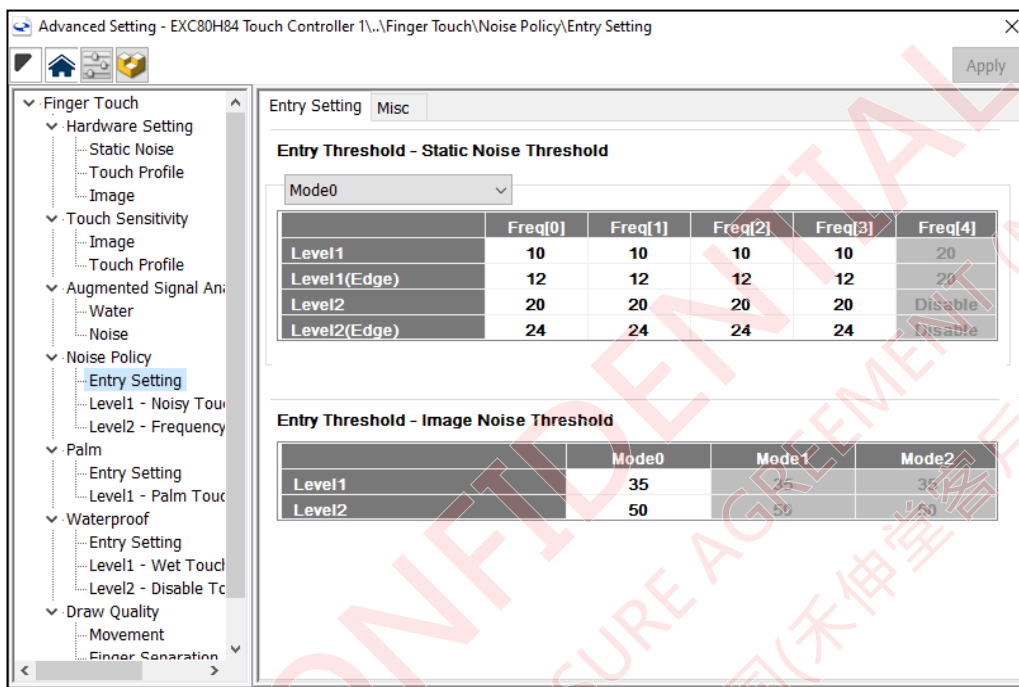
General



Frequency Hopping	
Frequency Hopping	Enable automatic Frequency Hopping feature. If enabled, it will help the controller to avoid interference frequencies.
Image Check Noise	
Image Check Noise	If Image Check Noise is enabled, the image SNR analysis feature will analyze the severity of noise interference.
Functions	
Skip first frequency	When doing Frequency Hopping , the controller will skip the first working frequency.
Auto back to first frequency	After all the noises disappear and wait until the controller remains idle for 20 seconds, the controller will hop back to the first working frequency.

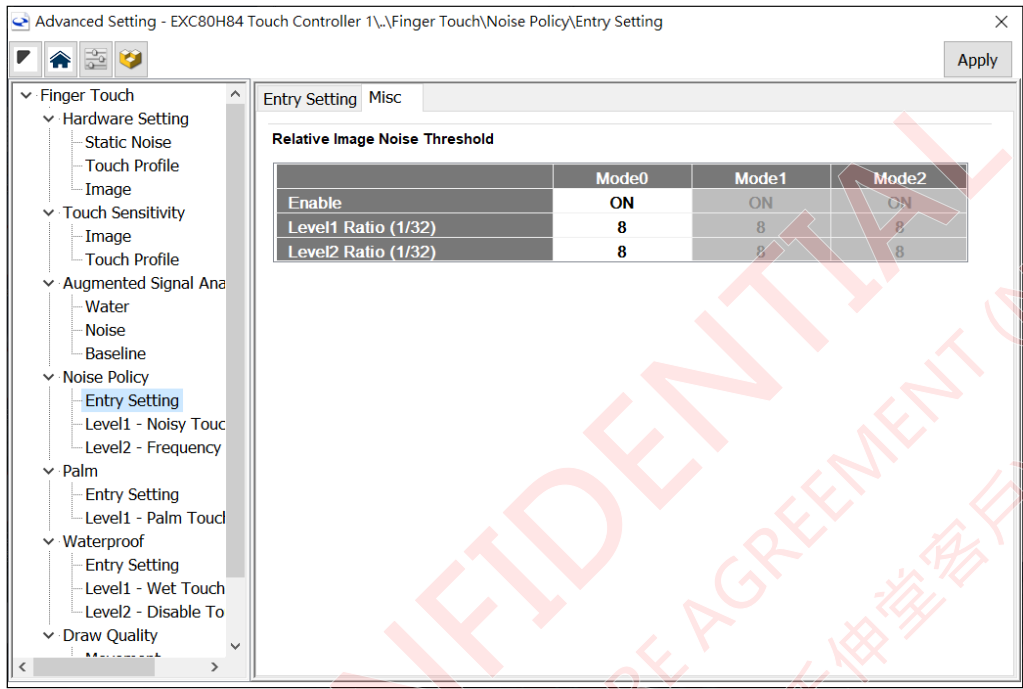
i. Noise Policy \ Entry Setting

Entry Setting



Entry Threshold - Static Noise Threshold	
Mode	You can set dedicated noise entry settings for different scenarios.
Level1	If Static Noise is greater than Level1 / Level1(Edge) threshold, the controller will enter the Noisy Touch state.
Level1(Edge)	
Level2	If Static Noise is greater than Level2 / Level2(Edge) threshold, the controller will do Frequency Hopping .
Level2(Edge)	
Entry Threshold – Image Noise Threshold (Unit: %)	
※ The following thresholds will only be valid when Image Check Noise is enabled.	
Level1	If ImageNoise is greater than Level1 , the controller will enter the Noisy Touch state.
Level2	If ImageNoise is greater than Level2 , the controller will do Frequency Hopping .

Misc

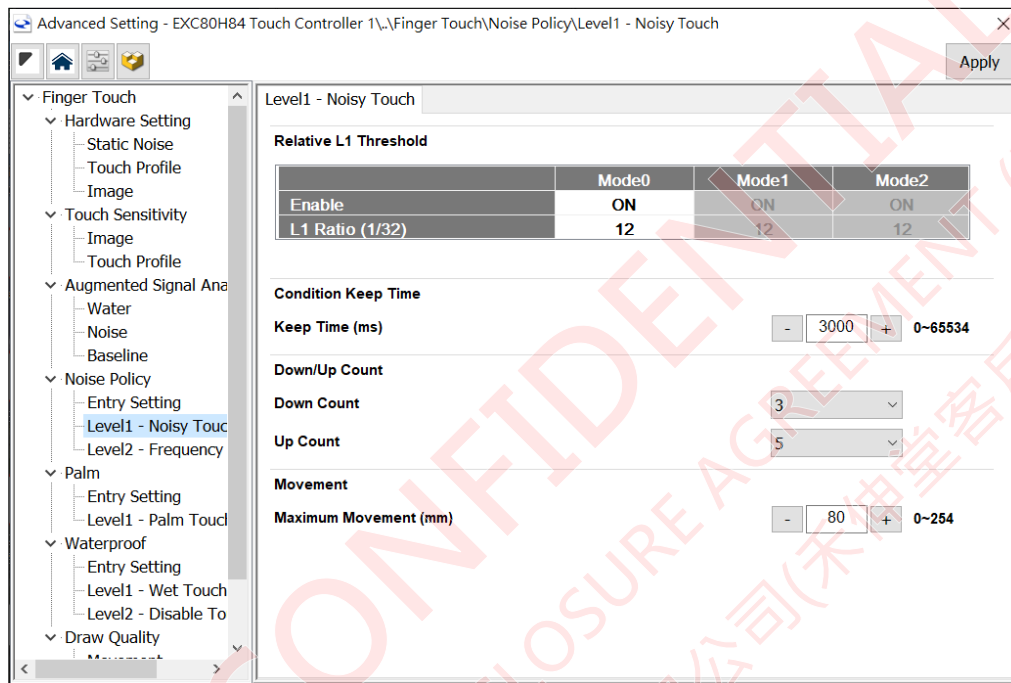


Relative Image Noise Threshold	
※ The following thresholds will only be valid when Image Check Noise is enabled.	
※ Description ※	※ In high sensitivity settings, enable this feature for dynamically changing relative Image Check Noise sensitivity ※ The higher the Relative Image Noise Threshold , the lower the sensitivity of switching states.
Level1 Ratio (1/32)	It is used to adjust the sensitivity of Relative Image Noise entering Noisy Touch.
Level2 Ratio (1/32)	It is used to adjust the sensitivity of Relative Image Noise entering Level2 and doing Frequency Hopping .

ii. Noise Policy \ Level 1- Noisy Touch

Level1 – Noisy Touch

The touch performance setting page after entering Level 1- Noisy Touch

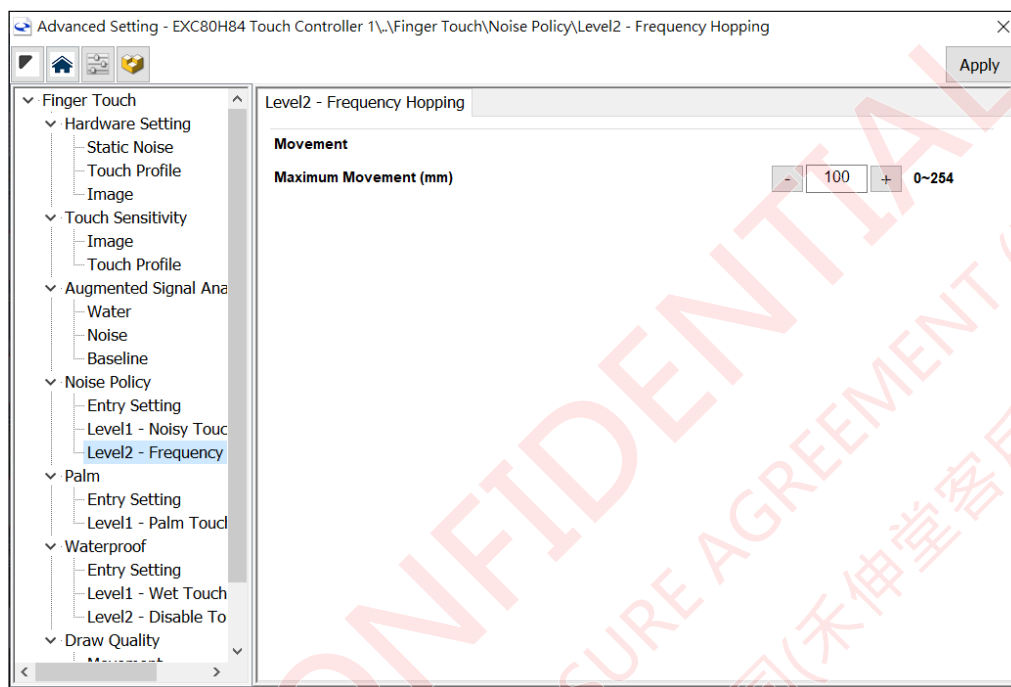


Relative L1 Threshold	
Enable	Enable Relative L1 Threshold feature in Level 1: Noisy Touch .
L1 Ratio (1/32)	L1 Ratio (1/32) will be used to calculate Relative L1 Threshold . (i.e. $\text{MaxL1} \times \frac{\text{L1 Ratio}}{32}$ The relative L1 Threshold cannot be less than the origin L1 Threshold .
Condition Keep Time	
Keep Time (ms)	The keeping time of Noisy Touch state If neither noise nor finger is detected within Keep Time , the controller will enter normal mode Level 0.
Down/Up Count	
Down count	In Level 1: Noisy Touch state, the number of frames with touch is needed before the Down event is reported.
Up count	In Level 1: Noisy Touch state, the number of frames without touch is needed before the UP event is reported.

Movement	
Maximum Movement (mm)	In Level 1: Noisy Touch , the maximum distance between any two points that can connect with a line. (Unit: mm) ※ Any distance value between two touch points is less than Maximum Movement will be connected into a line.

iii. Noise Policy \ Level2 – Frequency Hopping \

Level2 – Frequency Hopping



Movement	
Maximum Movement (mm)	At Level2 – Frequency Hopping , the maximum distance between any two points that can connect with a line. (Unit: mm)

3.2.F. Finger Touch \ Palm

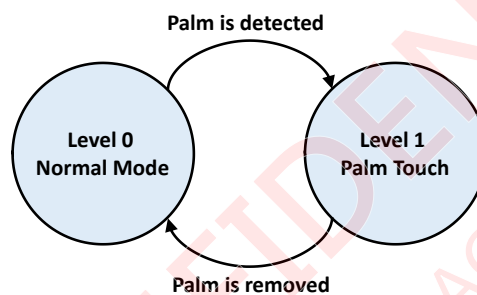
EETI controller can automatically detect a palm contact and reject it.

Normal mode:

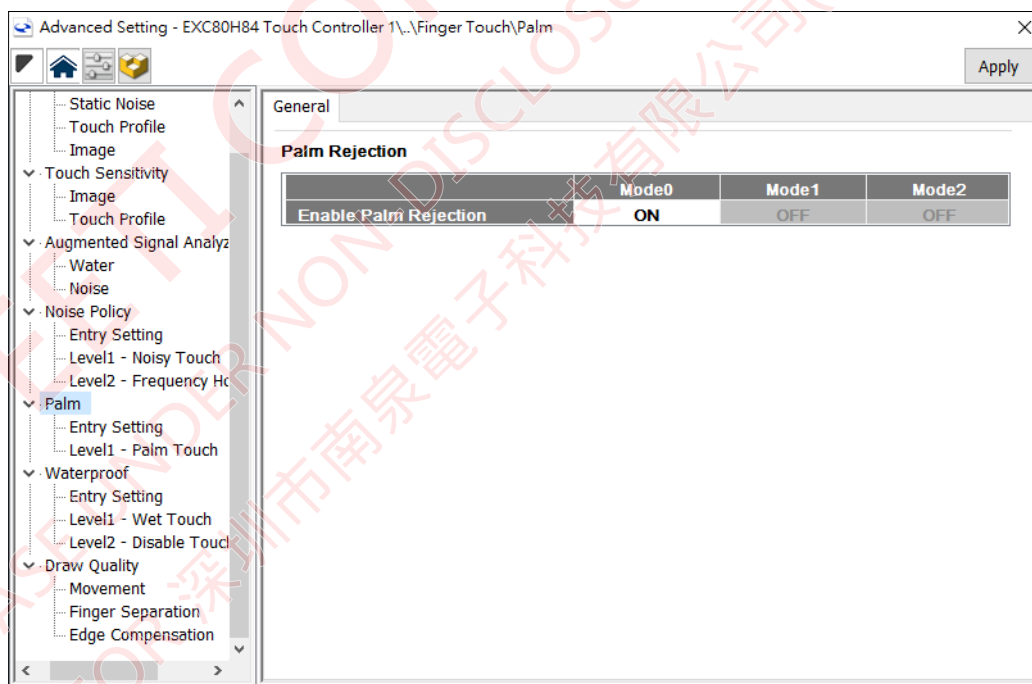
In a normal situation, the touch controller will stay in this state.

Level1 - Palm Touch:

If the touch controller detects a palm contact, the touch controller will enter Level1 - Palm Touch. Within the area of palm contact, all touch signals will be invalid.



General

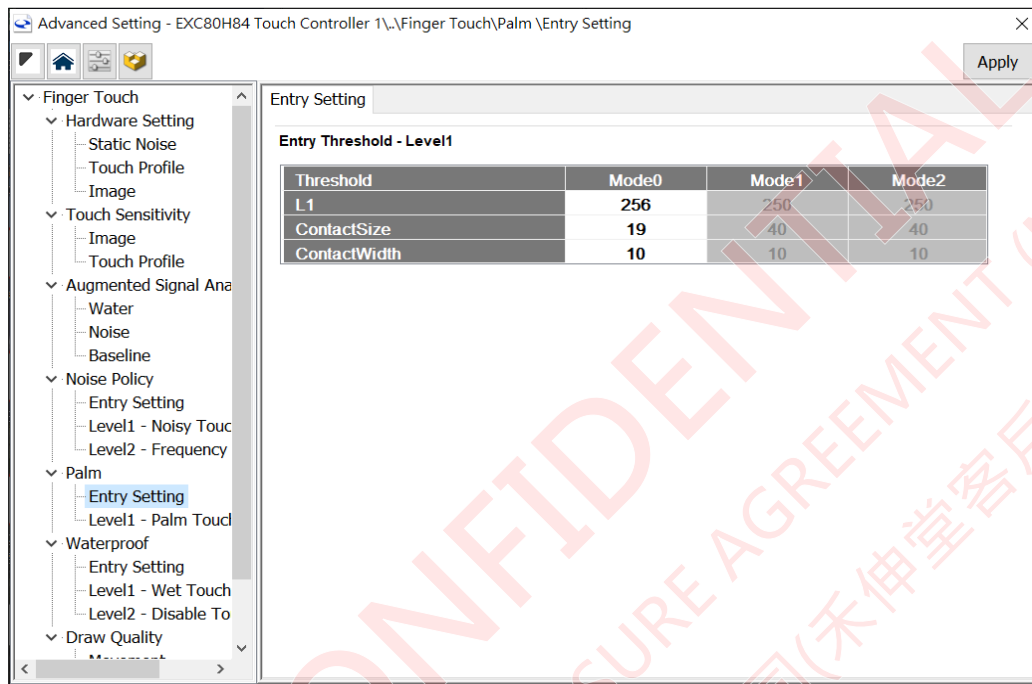


Palm Rejection

Enable Palm Rejection	Enable Palm Rejection feature.
-----------------------	---------------------------------------

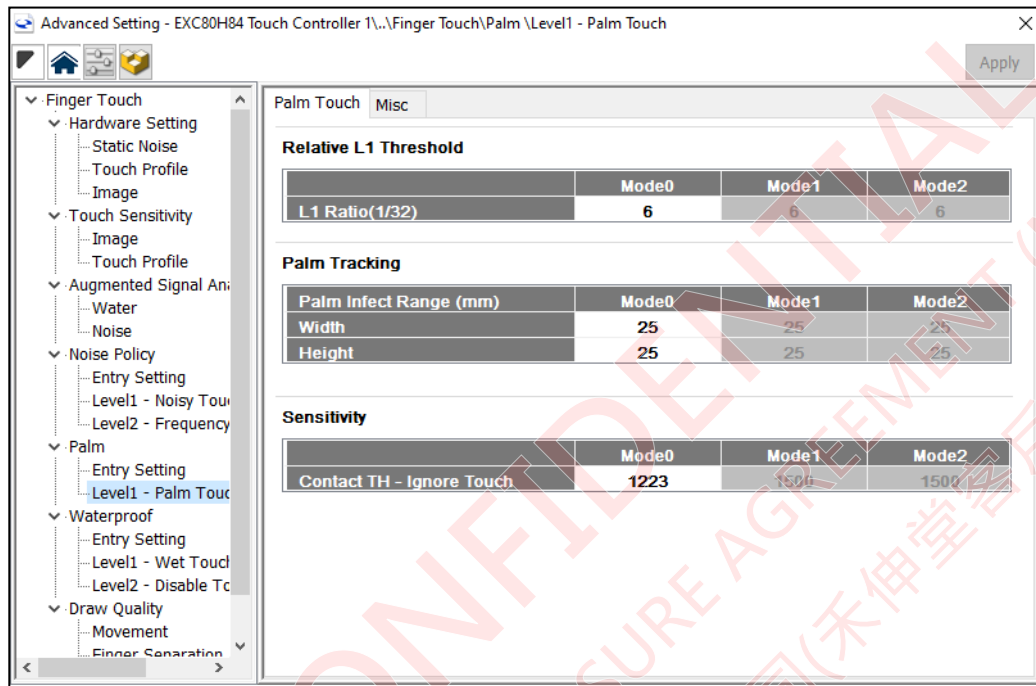
i. Palm \ Entry Setting

Entry Setting



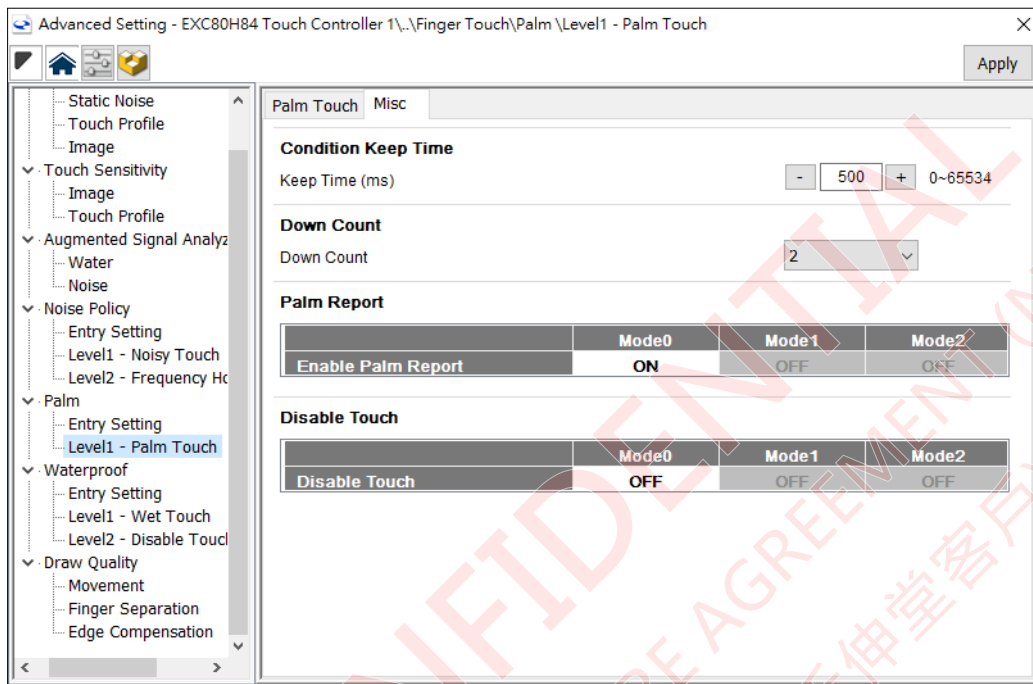
Entry Threshold – Level1

L1	Any node's L1 signal exceeds L1 is a "palm node". Usually, this L1 threshold is set to SensitivityL1*1.2.
ContactSize	When the touch area is larger than ContactSize threshold, the controller enters Level1: Palm Touch .
ContactWidth	When the contact width (Unit: node) is larger than the ContactWidth threshold, the controller enters Level1: Palm Touch .

ii. **Palm \ Level1 - Palm Touch ****Palm Touch**

Relative L1 Threshold	
L1 Ratio(1/32)	<p>In Level1:Palm Touch state, the L1 Ratio(1/32) will be used to calculate Relative L1 Threshold. (ex : $\text{MaxL1} \times \frac{\text{L1 Ratio}}{32}$)</p> <p>Within the L1 threshold and the Relative L1 Threshold, whichever has a higher threshold value will be used to determine the touch signal.</p> <p>WHEN TO USE: To stabilize touch performance in high sensitivity settings.</p>
Palm Tracking	
Palm Infect Range(mm) Width/Height	The range of protected areas extends from the Palm area . Any signal within this range will be invalid. (Unit: mm).
Sensitivity	
Contact TH – Ignore Touch	In Level1:Palm Touch state, any touch signal that exceeds this threshold will be invalid.

Misc



Condition Keep Time	
Keep Time (ms)	When a palm leaves the touch panel, the remaining time for the controller to stay in the Level1:Palm Touch state. (Unit: ms)
Down Count	
Down Count	In Level1:Palm Touch state, if the number of valid touch frames exceeds Down Count , the Down event will be reported.
Palm Report	
Enable Palm Report	If Palm Report is enabled, the palm contact will be reported.
Disable Touch	
Disable Touch	If Disable Touch is enabled, no touches will be reported when palm contact is detected. (This feature will apply to the entire touch panel)

3.2.G. Finger Touch \ Waterproof

EETI touch controller can automatically detect the water quantity (WQ) on the touch screen surface and trigger different levels of water protection to mitigate the interference.

Normal mode:

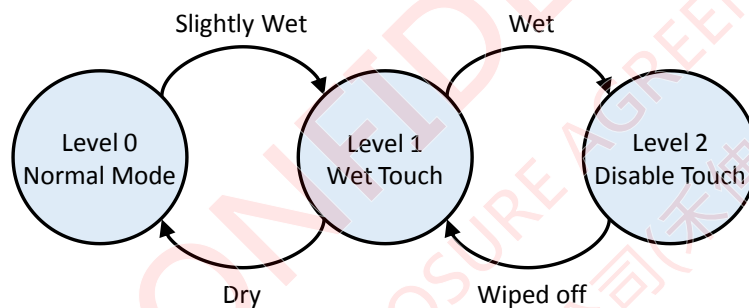
In a normal situation, the touch controller will stay in this state.

Level1 - Wet Touch:

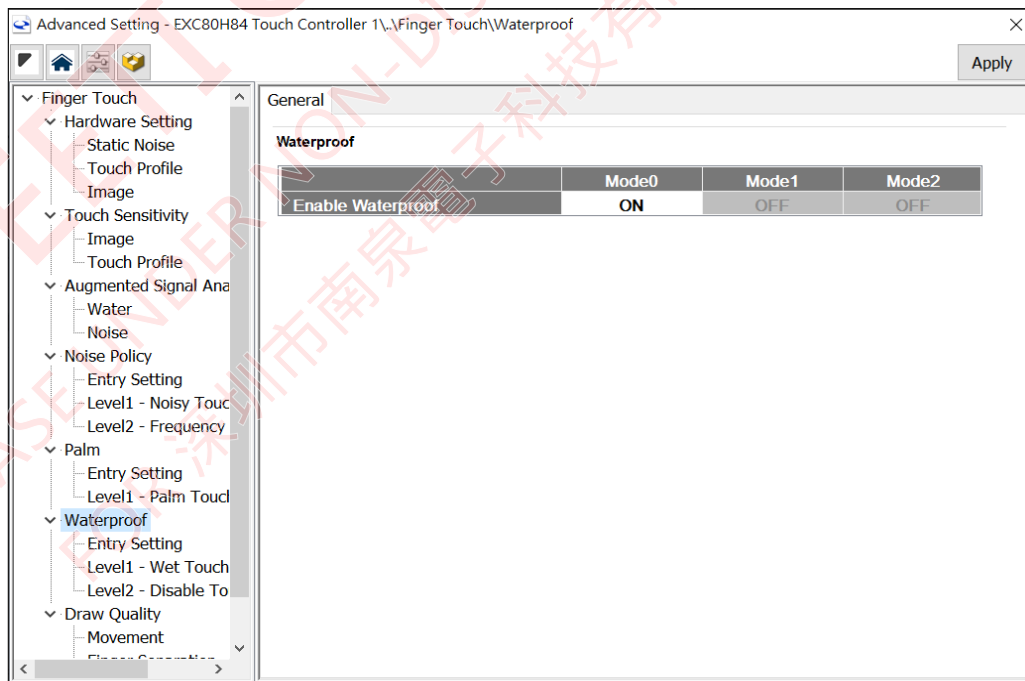
If the touch panel fulfills the criterion of entering **Level1 - Wet Touch**, the controller will adjust the sensitivity and other miscellaneous settings to stabilize the touch performance.

Level2 – Disable Touch:

If the touch panel fulfills the criterion of entering **Level2 – Disable Touch**, the controller will disable the touch function to prevent ghost touch.



General



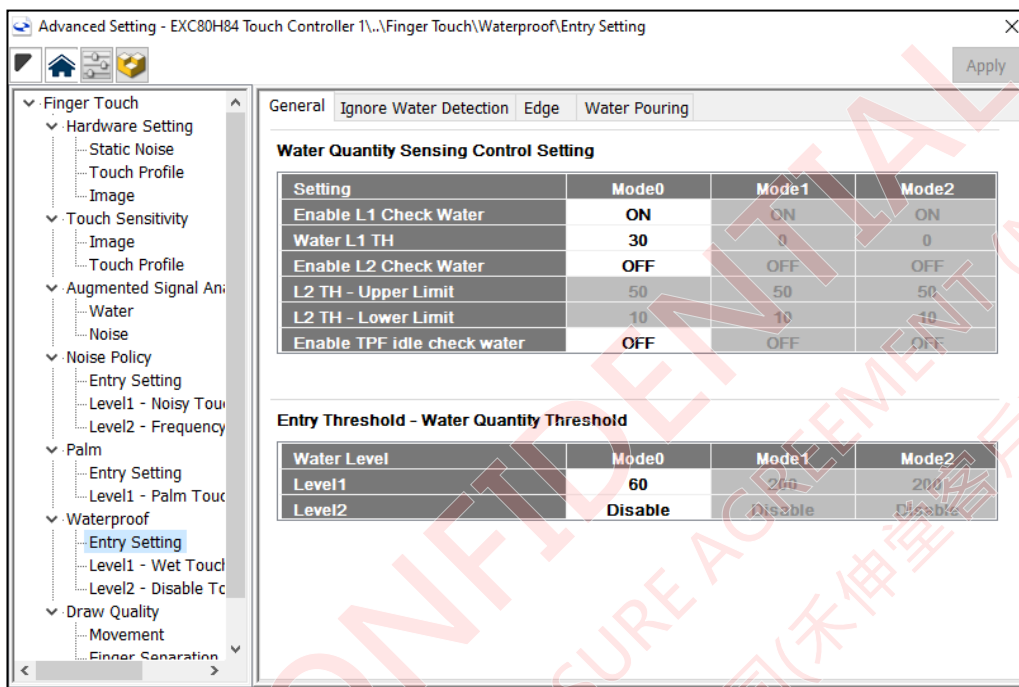
Waterproof

Enable Waterproof

Enable / Disable the **Waterproof** feature.

i. Waterproof \ Entry Setting

General

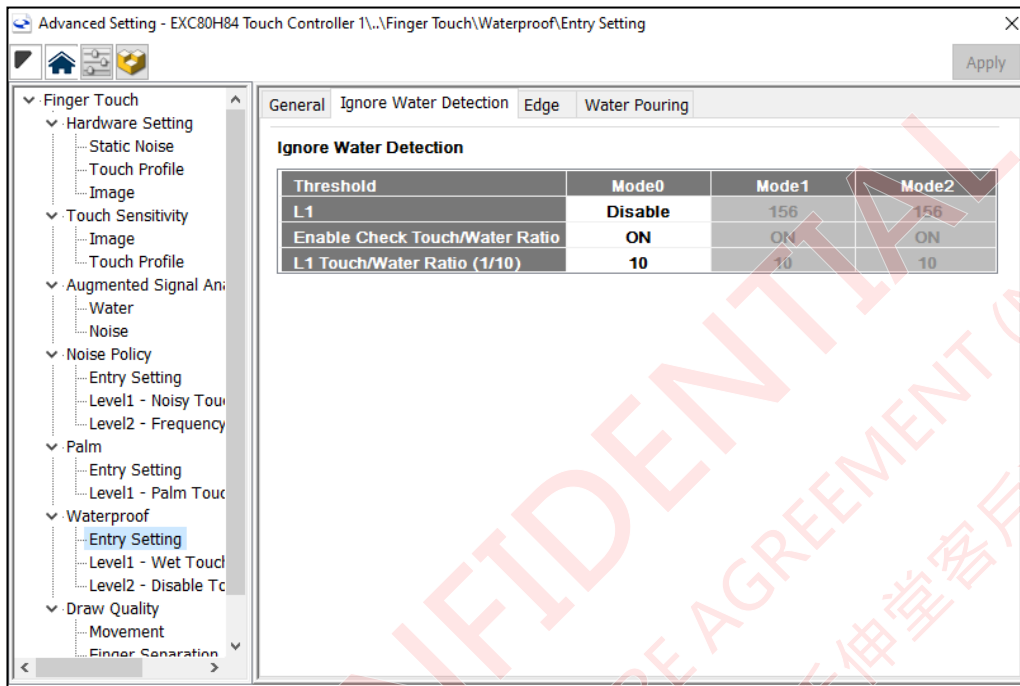
**Water Quantity Sensing Control Setting**

Enable L1 Check Water	Enable the feature of setting L1 to be one of the WQ sources.
Water L1 TH	If any absolute value of the negative L1 signal is greater than Water L1 TH , this signal will be calculated into WQ .
Enable L2 Check Water	Enable the feature of setting L2 to be one of the WQ sources.
L2 TH – Upper Limit L2 TH – Lower Limit	The absolute value of L2 within [Lower, Upper] range will be calculated into WQ . ※ Please note that the WQ calculated from L1 and L2 are independent. Only the highest WQ will be shown in eGalaxTuner.
Enable TPF idle check water	Enable the feature of using the TPF state to determine the water condition. If enabled, it can help increase the accuracy and sensitivity to determining the water condition.

Entry Threshold – Water Quantity Threshold

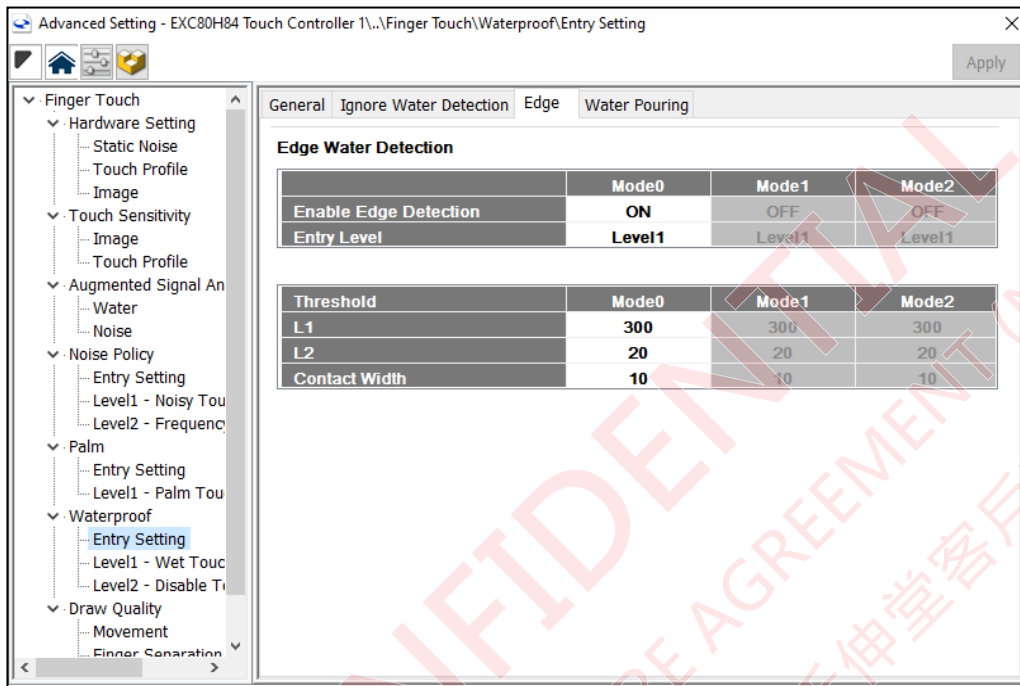
Level1	If WQ is greater than the Level1 threshold, the controller will enter Level1: Wet Touch state.
Level2	If WQ is greater than the Level2 threshold, the controller will enter Level2: Disable Touch state.

Ignore Water Detection



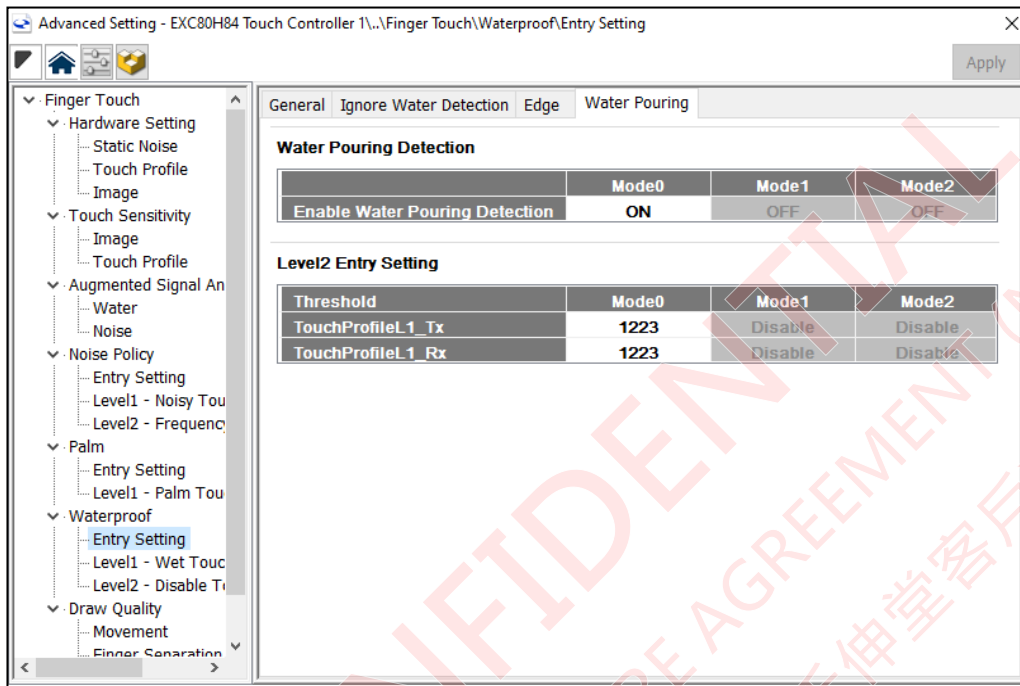
Ignore Water Detection	
L1	If the maximum L1 signal is larger than this threshold, the current WQ will be invalid. Set 65534 can disable this feature.
Enable Check Touch/Water Ratio	Enable Check Touch/Water Ratio . After this feature is enabled, the controller will use the ratio of finger/water to determine if the current WQ is valid.
L1 Touch/Water Ratio (1/10)	If Check Touch/Water Ratio is enabled, and if $\frac{\text{MaxL1}}{\text{MinL1}}$ is larger than $\frac{\text{L1 Touch/Water Ratio}}{10}$, the controller will not enter the Waterproof state.

Edge



Edge Water Detection	
Enable Edge Detection	Enable water signal analysis on edge.
Entry Level	Level1: If water signal is detected on edge, enter Level1: Wet touch . Level2: If water signal is detected on edge, enter Level2: Disable touch .
Threshold	
L1	※ Only analyze the image signal on edge Tx channels. If the edge channels satisfy the following condition, the controller will enter edge Waterproof state.
L2	
Contact Width	

Water Pouring



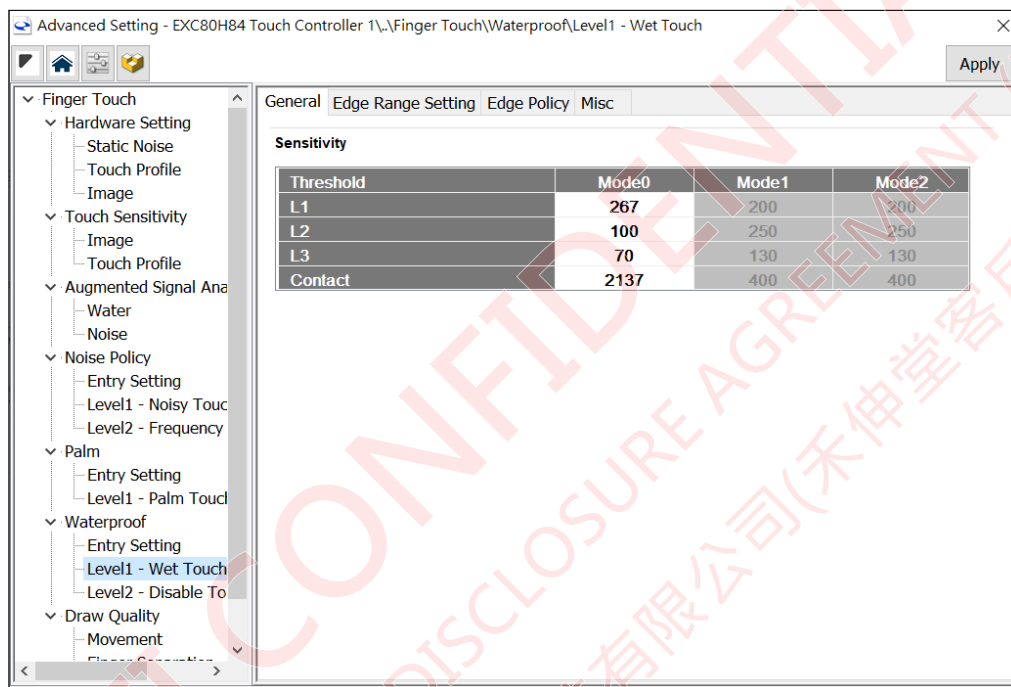
Water Pouring Detection	
Enable Water Pouring Detection	Enable the Water Pouring Detection feature.
Level2 Entry Setting	
TouchProfileL1_Tx	If the L1 signal on the Touch Profile Tx is larger than the TouchProfileL1_Tx threshold, the controller will enter Level2: Disable touch .
TouchProfileL1_Rx	If the L1 signal on the Touch Profile Rx is larger than the TouchProfileL1_Rx threshold, the controller will enter Level2: Disable touch .

ii. Waterproof \ Level1 - Wet Touch

General

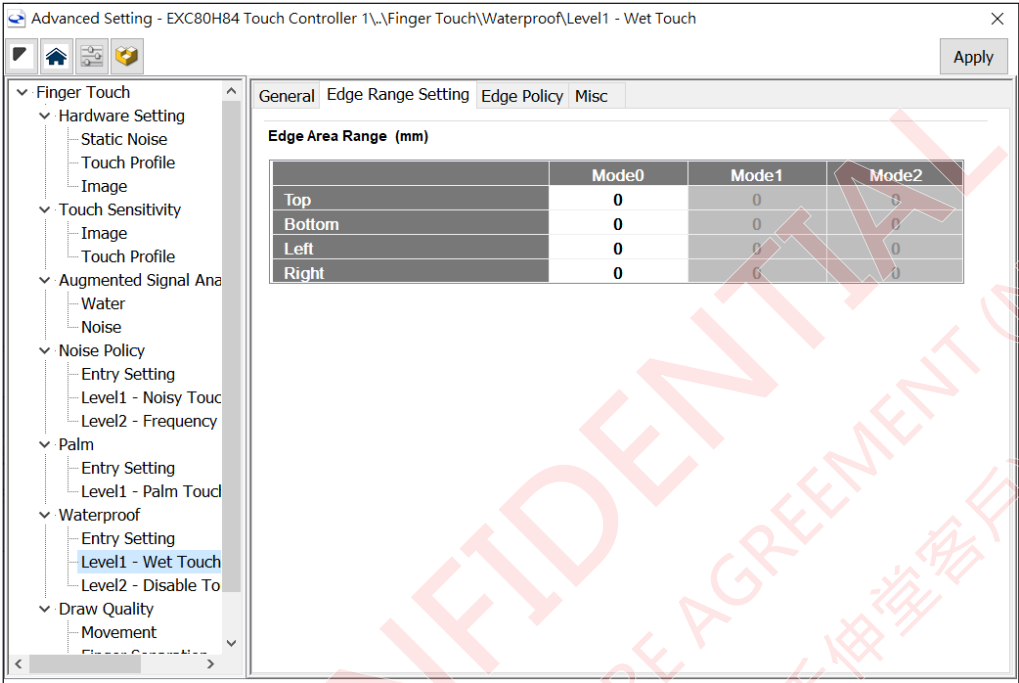
The following part is the threshold settings for **Level1: Wet touch** state.

Parameters in this section should be set higher than normal settings to prevent ghost touch in the **Waterproof** state.



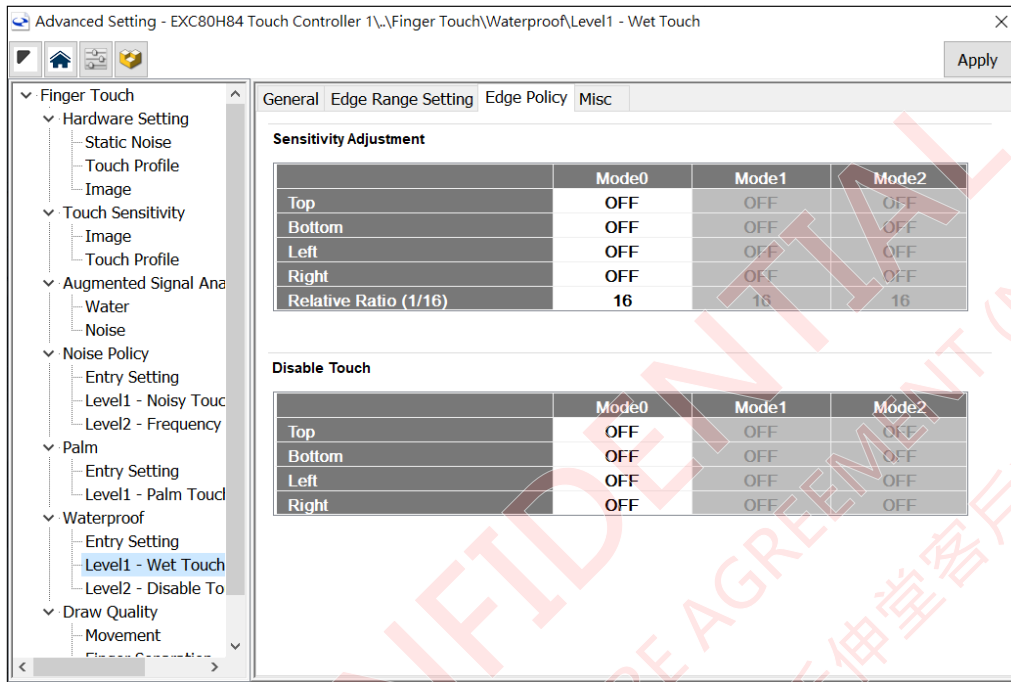
Sensitivity	
L1	The suggested L1 threshold is 80% of the average value. You can adjust this threshold to optimize touch sensitivity.
L2	The suggested L2 threshold is 50% of the average value. You can adjust this threshold to optimize touch sensitivity.
L3	The suggested L3 threshold is 50% of the average value. You can adjust this threshold to optimize touch sensitivity.
Contact	Please refer to eGalaxTuner\Draw Test\ Touch Information to see how to set the Contact finger threshold. On the screen, please press your finger with regular contact pressure. The suggested Contact threshold is 80% of the Contact value. You can adjust this threshold to optimize touch sensitivity.

Edge Range Setting



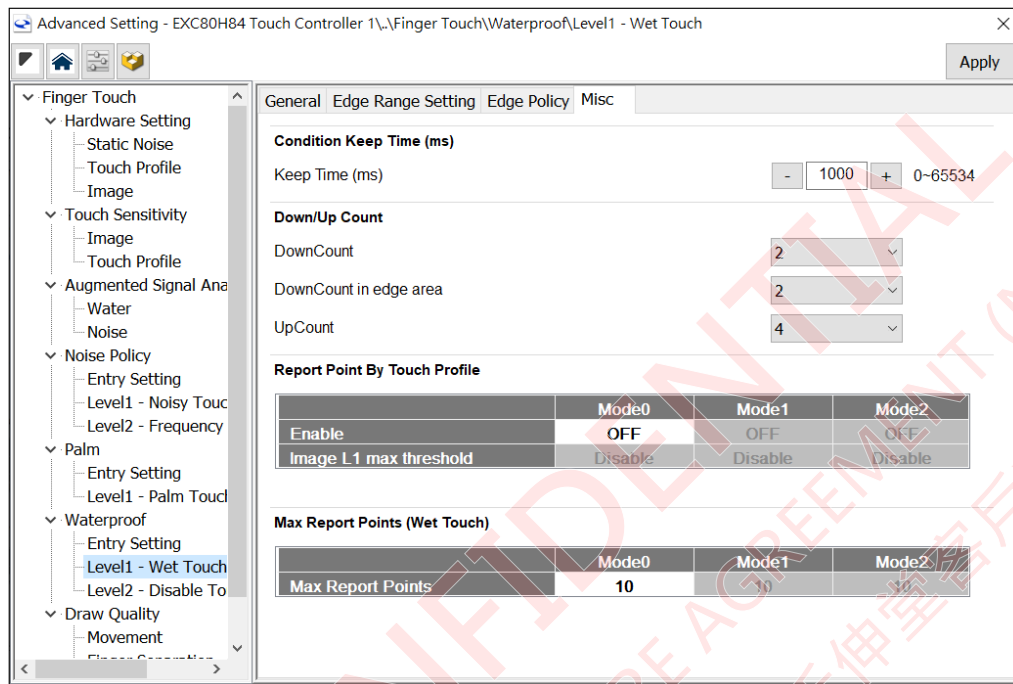
Edge Area Range (mm)	
※ Description ※	<div>Right Side of the Panel</div> <div>Edge Range</div>
Top / Bottom / Left / Right	<p>You can set the Edge Area Range for the four edges: Top, Bottom, Left, and Right. (Unit: mm)</p> <p>Take the above image as an example. The edge area is the area from the outermost active area to the yellow dotted line.</p>

Edge Policy



Sensitivity Adjustment	
Top / Bottom / Left / Right	In Level 1: Wet Touch state, if a specific area of Sensitivity Adjustment is enabled, the L1 threshold of that specific area will be increased by $\frac{\text{Relative Ratio}}{16}$.
Relative Ratio (1/16)	
Disable Touch	
Top / Bottom / Left / Right	In Level 1: Wet Touch state, if the specific area of Disable Touch is enabled, the finger touch function of that specific area will be disabled.

Misc

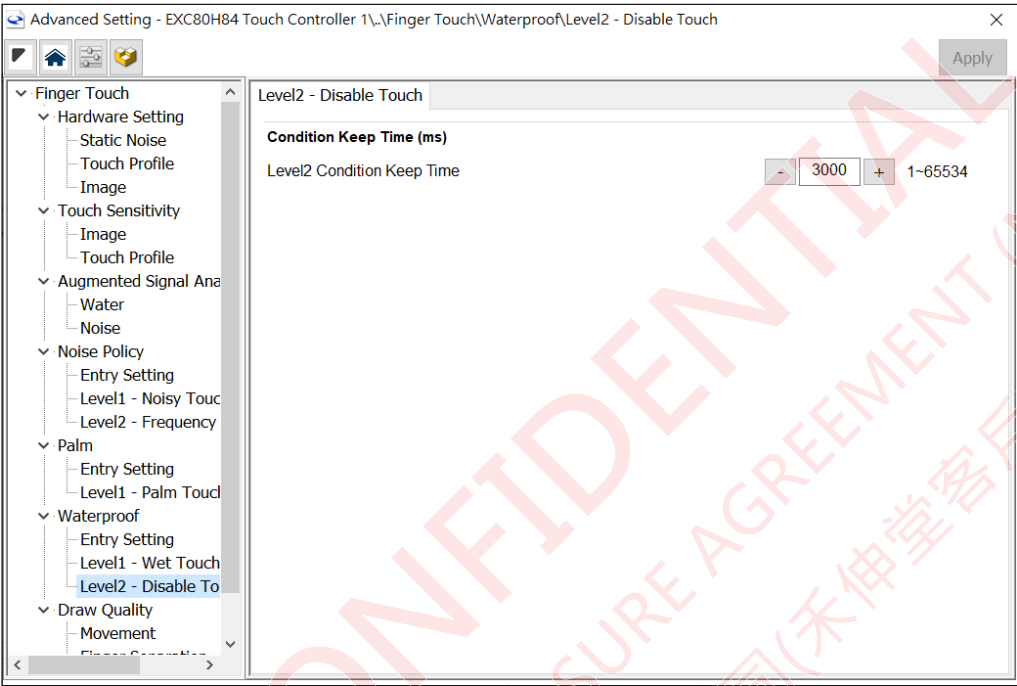


Condition Keep Time (ms)	
Keep Time (ms)	In Level 1: Wet Touch state, when WQ is less than the Level 1: Wet Touch threshold, the remaining time for the controller to stay in the Level 1: Wet Touch state. (Unit: ms)
Down/Up Count	
DownCount	In Level 1: Wet Touch state, if the number of valid touch frames exceeds Down Count , the Down event will be reported.
DownCount in edge area	In Level 1: Wet Touch state, if the number of valid touch frames on the edge exceeds DownCount in edge area , the Down event will be reported.
UpCount	In Level 1: Wet Touch state, for each touch, if the number of invalid frames of the corresponding touch exceeds UpCount , the UP event will be reported.
Report Point By Touch Profile	
Enable	If this feature is enabled, the controller will improve the touch performance when water is on the panel with Touch Profile data, and the max report point in Level1-Wet Touch state will be limited to 2.
Image L1 max threshold	Any L1 signal that is larger than this threshold will be ignored.

Max Report Points (Wet Touch)	
Max Report Points	In Level1-Wet Touch state, the maximum number of supported finger touches.

iii. **Waterproof \ Level2 - Disable Touch **

Level2 - Disable Touch



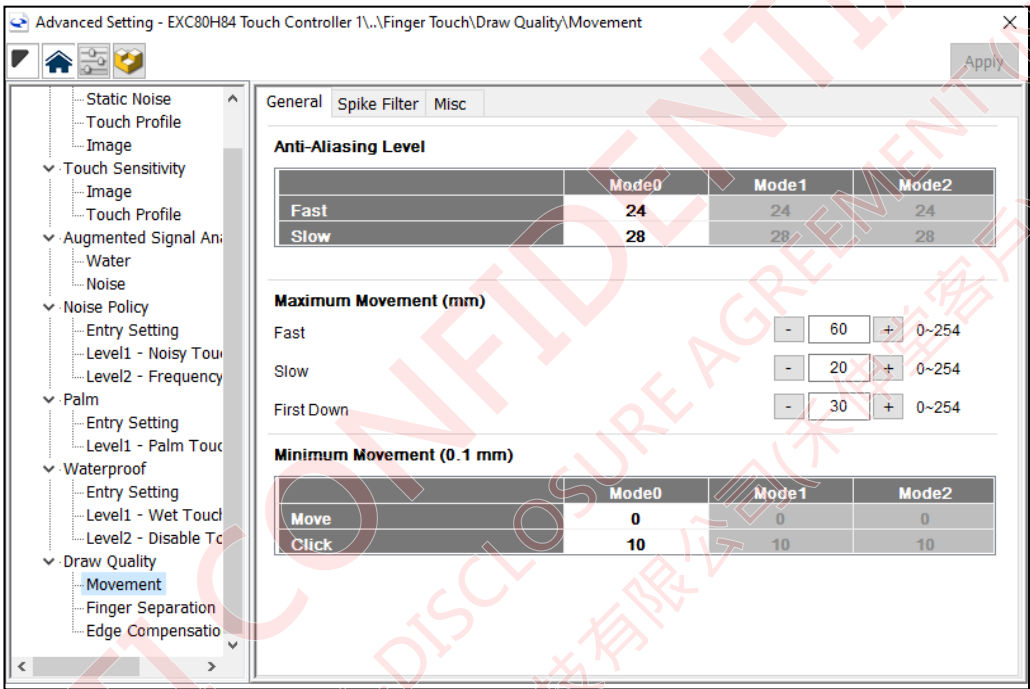
Condition Keep Time (ms)	
Level2 Condition Keep Time	In Level 2: Disable Touch , when WQ is less than the Level 2: Disable Touch threshold, the remaining time for the controller to stay in the Level 2: Disable Touch state.

3.2.H. Finger Touch \ Draw Quality

Users can customize **Draw Quality** to meet their specific needs, such as anti-aliasing level, finger separation, edge compensation, etc.

i. Draw Quality \ Movement

General

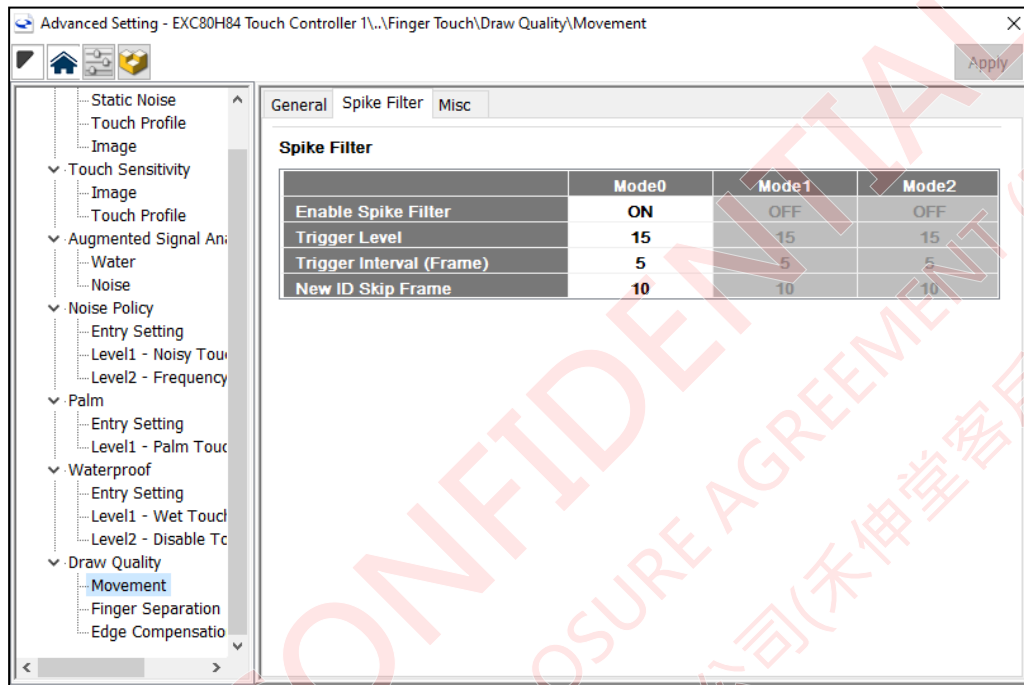


Anti-Aliasing Level	
※ Description ※	The drawing line will be smoother when the Anti-Aliasing level is higher, but latency may increase. According to the drawing speed, the controller will dynamically adjust the Anti-Aliasing Level .
	<div>Level 10<div></div></div> <div>Level 26<div></div></div>
Fast	Anti- Aliasing Level for high drawing speed
Slow	Anti- Aliasing Level for low drawing speed

Maximum Movement (mm)	
※ Description ※	<p>If the distance value between the two touch points is less than Maximum movement, the two touch points will be connected with a line.</p> <p>If the distance value between the two touch points exceeds Maximum movement, the two touch points will not be connected with a line. Instead, only the two touch points will be reported. (Unit: mm)</p>
Fast	Maximum Movement for high drawing speed
Slow	Maximum Movement for low drawing speed
First Down	Maximum Movement for the beginning of drawing
Minimum Movement (0.1mm)	
※ Description ※	<p>To report a new touch point, the distance value between the old touch point and the new point needs to exceed Minimum Movement. (Unit:0.1mm)</p> <p>If the distance value between the old touch point and the new touch point is less than Minimum Movement, the new touch point will not be reported. Instead, only the old touch point will be reported.</p>
Move	The Minimum Movement for drawing
Click	<p>The Minimum Movement for the first-down finger input.</p> <p>※ If “long press” is hard to implement due to jitters, increasing this parameter may improve the situation.</p>

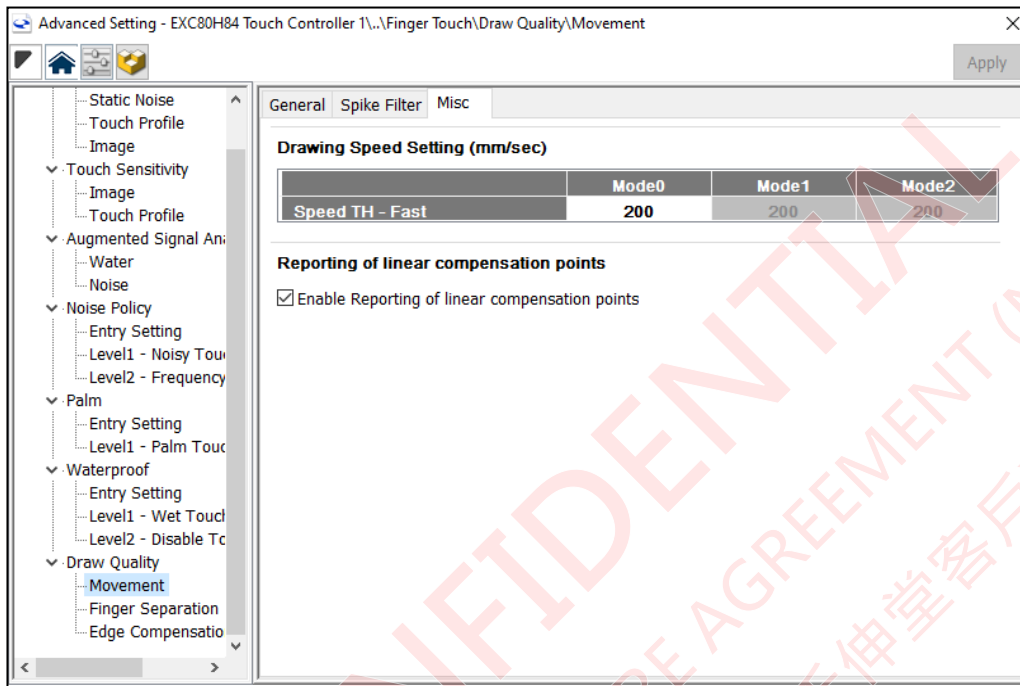
Spike Filter

Spike Filter aims to precisely remove the ghost touch caused by random noise interference, such as EFT, conducted interference, radiated interference, etc.



Spike Filter	
Enable Spike Filter	Enable Spike Filter feature.
Trigger Level	The sensitivity of detecting abnormal signals The higher the parameter, the more sensitive the detection will be.
Trigger Interval (Frame)	Minimum interval between each trigger of Spike Filter
New ID Skip Frame	At the beginning of the touch, the number of frames skipped before triggering Spike Filter .

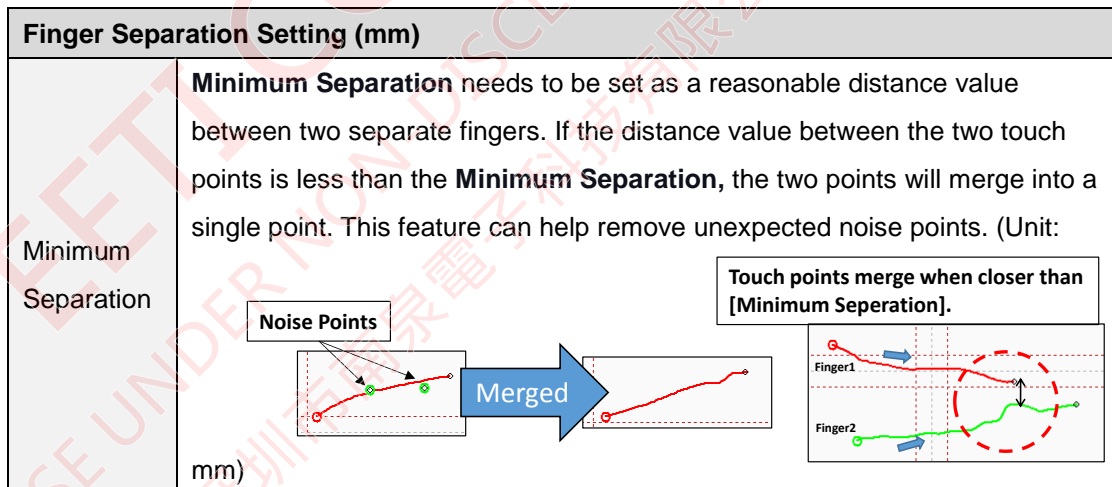
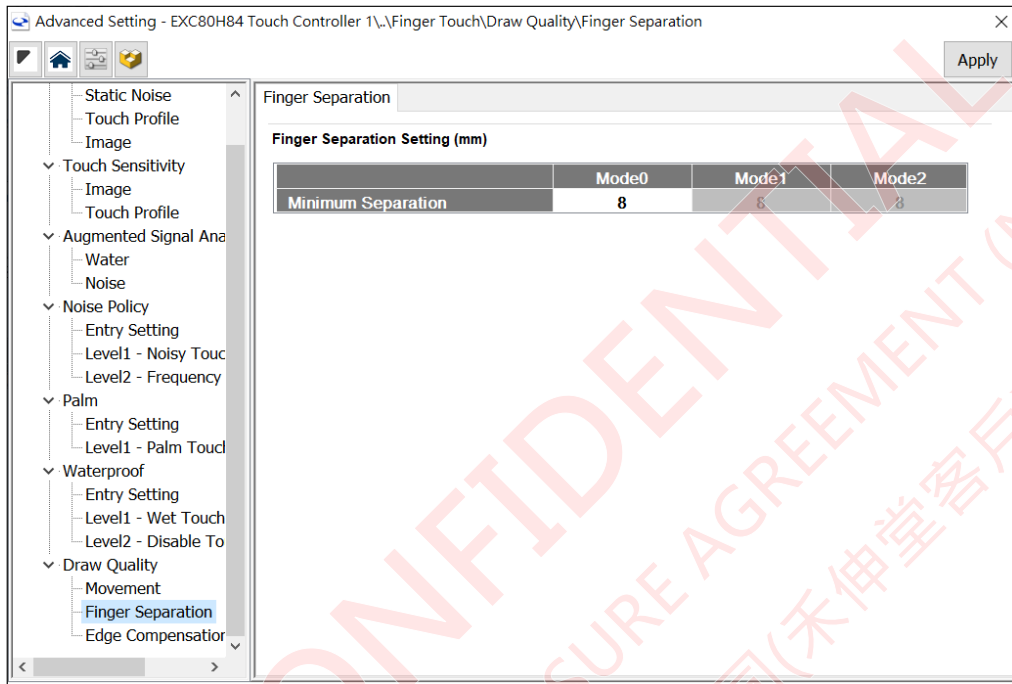
Misc



Drawing Speed Setting (mm/sec)	
Speed TH - Fast	When the drawing speed is larger than Speed TH – Fast , the Anti-Aliasing Level will be in Fast mode. (Unit: mm/s)
Reporting of linear compensation points	
Enable Reporting of linear compensation points	Enable this feature can slightly optimize linearity and increase the report rate. (Some host systems may miss points. It depends on the processing capacity of the host system.)

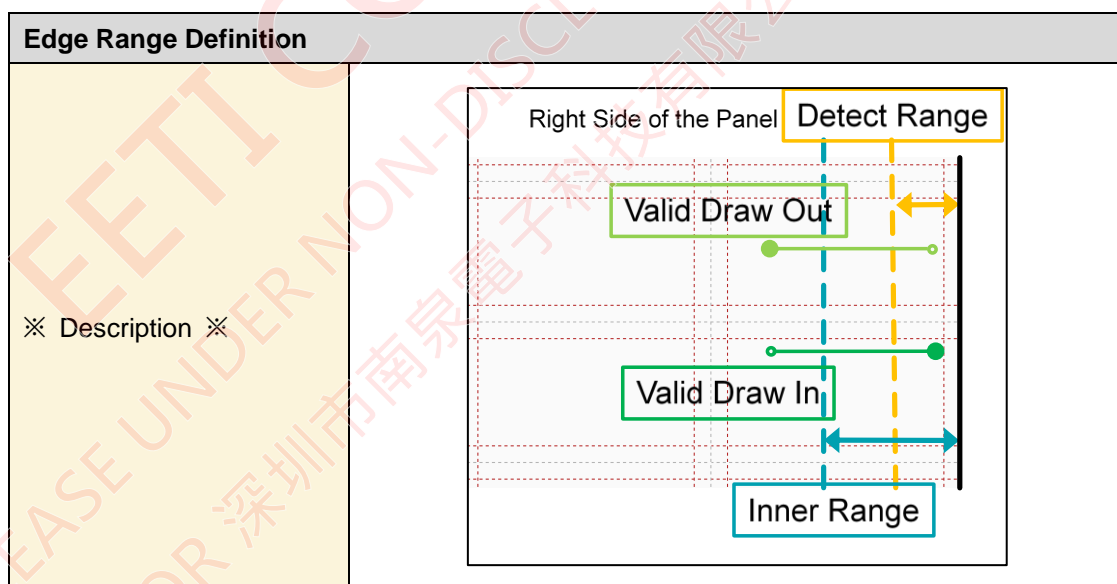
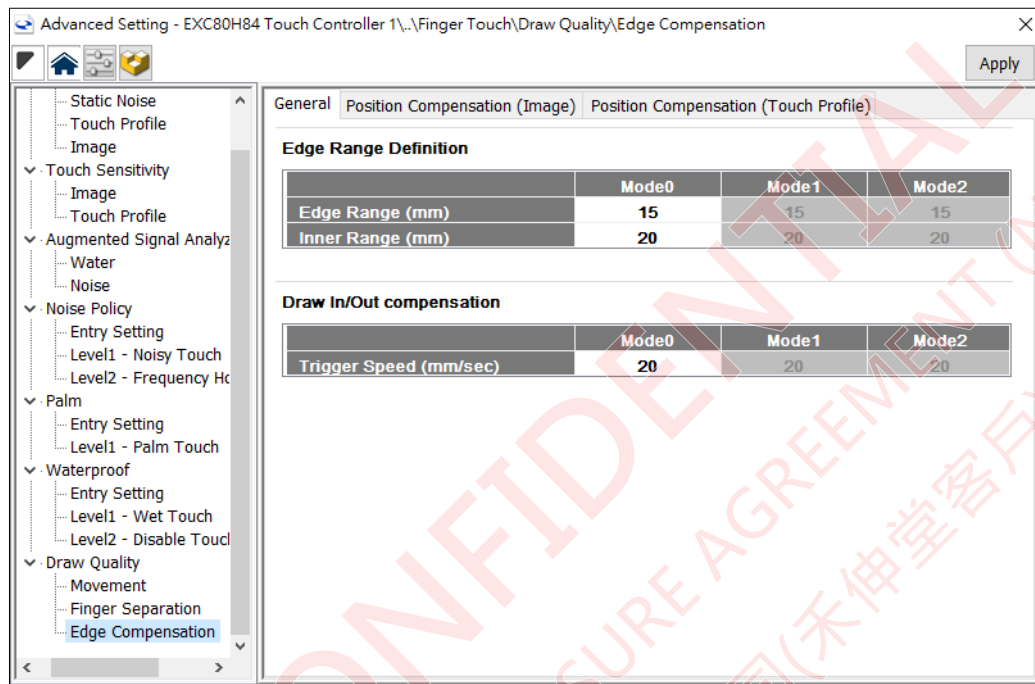
ii. Draw Quality \ Finger Separation

Finger Separation



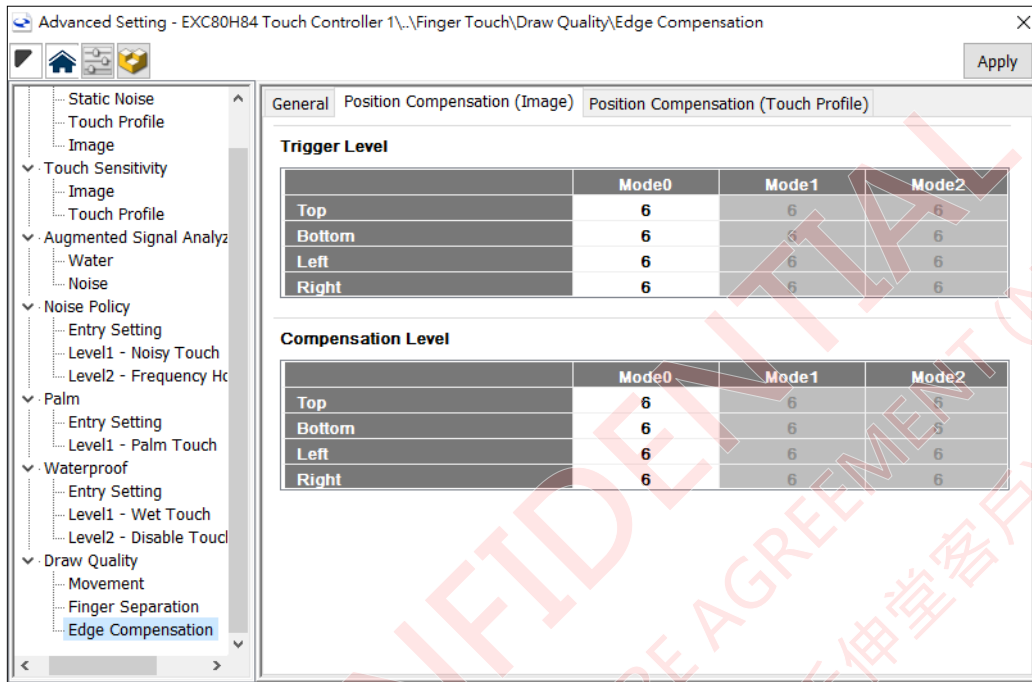
iii. Draw Quality \ Edge Compensation

General



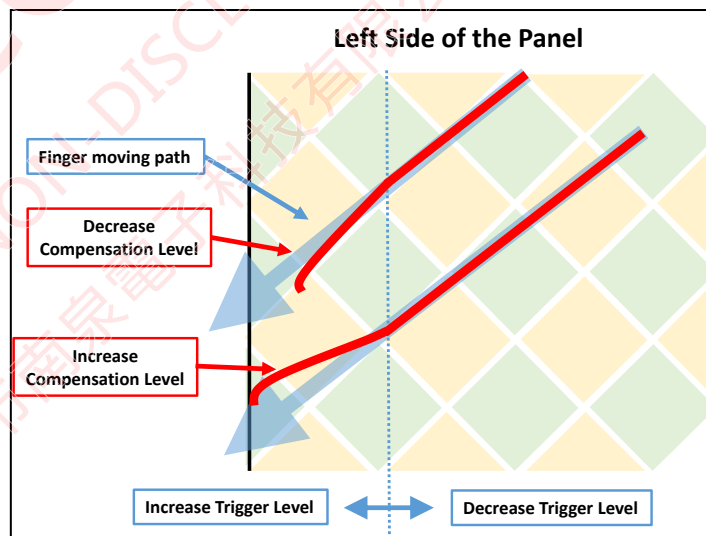
Edge Range Definition	
Edge Range (mm)	<p>This parameter defines the Edge Range for compensation. (Unit: mm)</p> <p>The inner Range value should be larger or equal to Edge Range.</p>
Inner Range (mm)	<p>WHEN TO USE 1: When it is hard to trigger Edge Compensation, increasing Edge Range may fix the issue.</p> <p>WHEN TO USE 2: If Edge Compensation is triggered too easily when writing with a Passive Stylus, increasing Inner Range may fix the issue.</p>
Draw In/Out compensation	
Trigger Speed (mm/sec)	<p>Within the range of Edge Compensation, if the drawing speed of draw in or draw out is larger than Trigger Speed, Draw In Compensation or Draw Out Compensation will be triggered. (Unit: mm/sec)</p>

Position Compensation (Image)



Position Compensation (Image)

※ Description ※



Trigger Level

The area of triggering **Edge Compensation**

Increasing this parameter will reduce the range of edge compensation. Decreasing this parameter will enlarge the range of edge compensation.

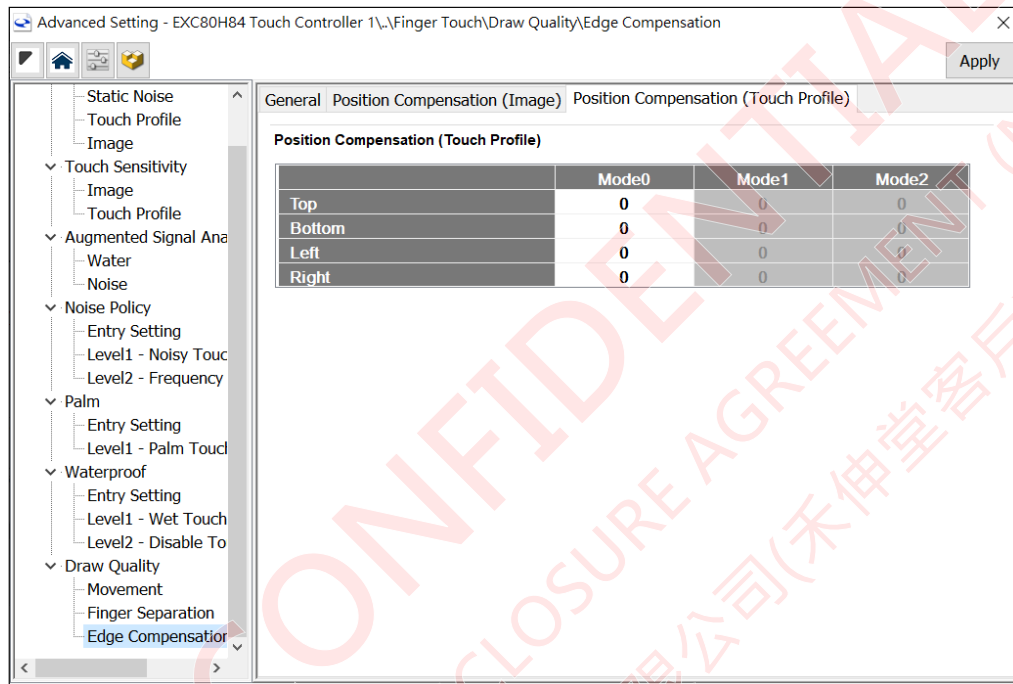
Compensation Level

Increasing the **Compensation Level** can make the touch point close to the edge. Decreasing the **Compensation Level** can make the touch point away from the edge.

Position Compensation (Touch Profile)

Configure the following compensation parameters when using **Touch Profile** to report points.

Note: Enable [Report point by Touch Profile](#) or [Report Point by Touch Profile](#) ([Waterproof](#)) is required



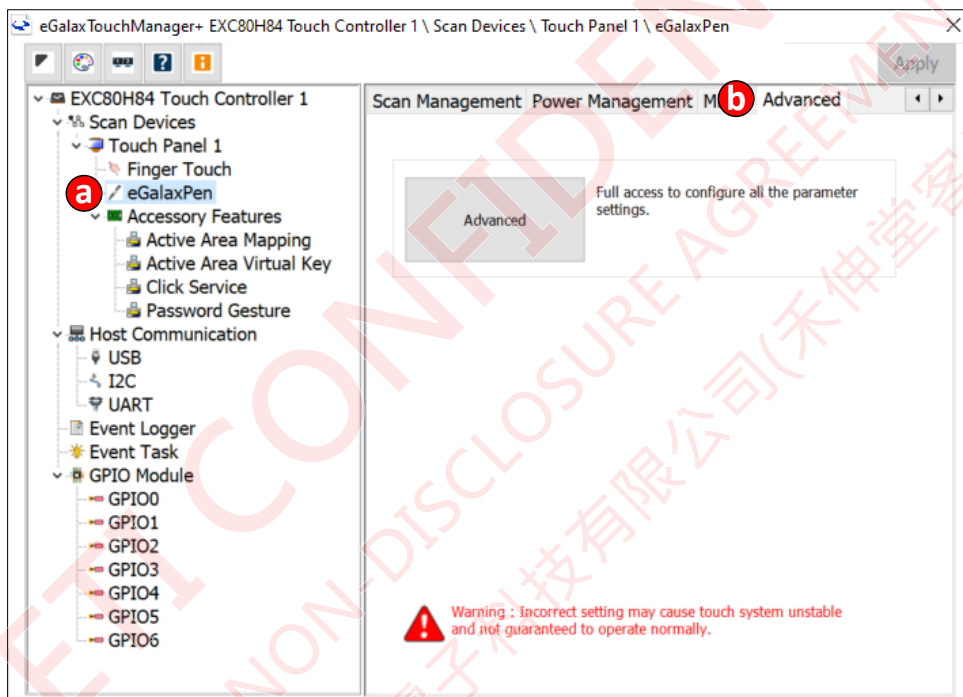
Position Compensation (Touch Profile)	
※ Description ※	When the algorithm calculates coordinates with Touch Profile data, the algorithm will refer to the Touch Profile compensation level parameter.
Top / Bottom / Left / Right	Increasing the Compensation Level will make the touch point closer to the edge. Decreasing the level will make the touch point away from the edge.

4. eGalaxPen Advanced Settings

In **eGalaxPen Advanced Settings**, you can configure various eGalaxPen-related parameters, such as stroke, button, and hover. Through proper configuration, these settings will help to optimize your **eGalaxPen** writing experience.

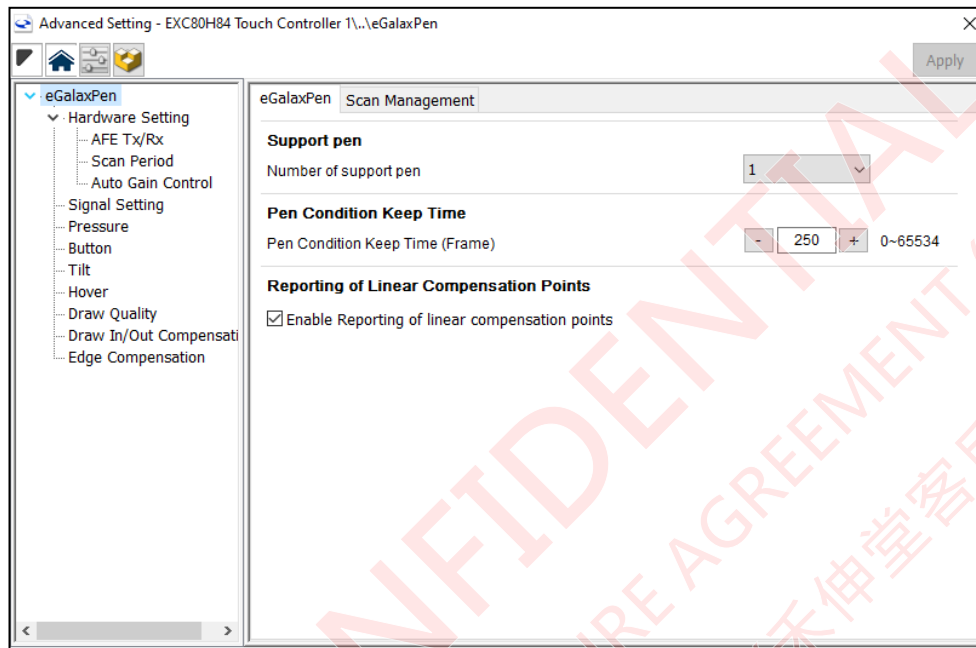
4.1. eGalaxPen

Click on **eGalaxPen** **(a)** and go to the far right of the right panel to find the **Advanced** **(b)** settings.



4.1.A. eGalaxPen \

eGalaxPen



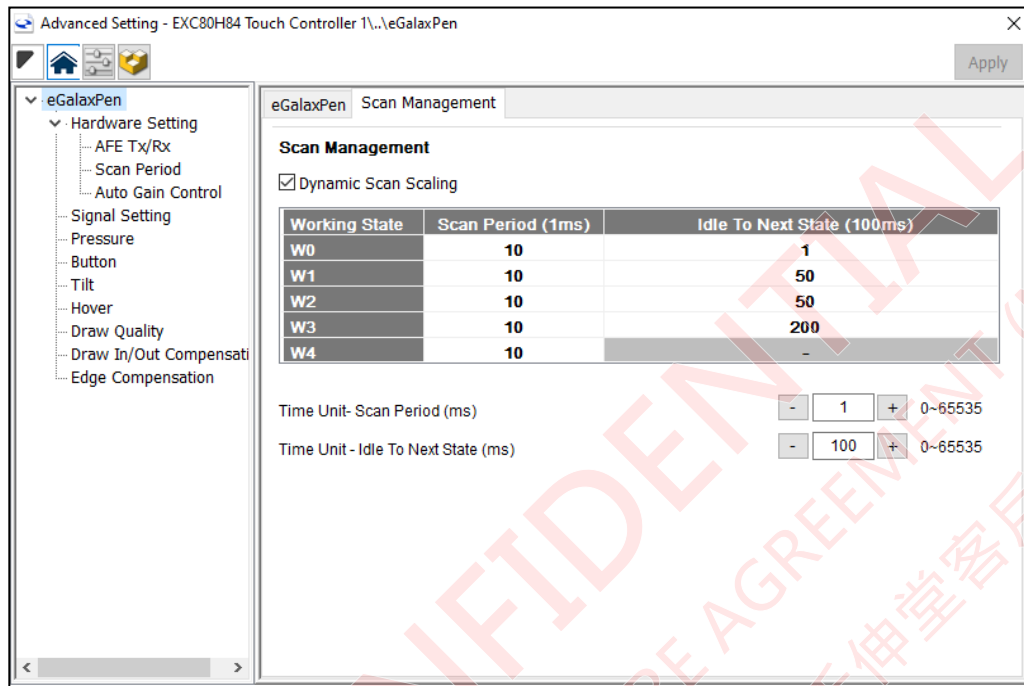
Support pen	
Number of support pen	EETI Orion controller can support at most four eGalaxPen .
Pen Condition Keep Time	
※ Description ※	<p>EETI controller scans eGalaxPen and finger touches differently. Three types of scanning are available in TM+:</p> <ol style="list-style-type: none"> 1) Pen First 2) Finger and Pen Simultaneously 3) Finger and Pen Exclusively <p>For further explanation, please refer to 5.2.E Touch Panel \ Other settings in EUG-038-eGalaxTouchManager Advanced User Guide.</p>
Pen Condition Keep Time (Frame)	When eGalaxPen leaves the touch panel, the remaining time for the controller to stay in the pen state. Within this remaining time, if the controller is not in Finger and Pen Simultaneously mode, finger touches will not be reported.

Reporting of Linear Compensation Points

Enable Reporting of
linear compensation
points

Enable this feature can slightly optimize linearity and increase the report rate. (Some host systems may miss points. It depends on the processing capacity of the host system.)

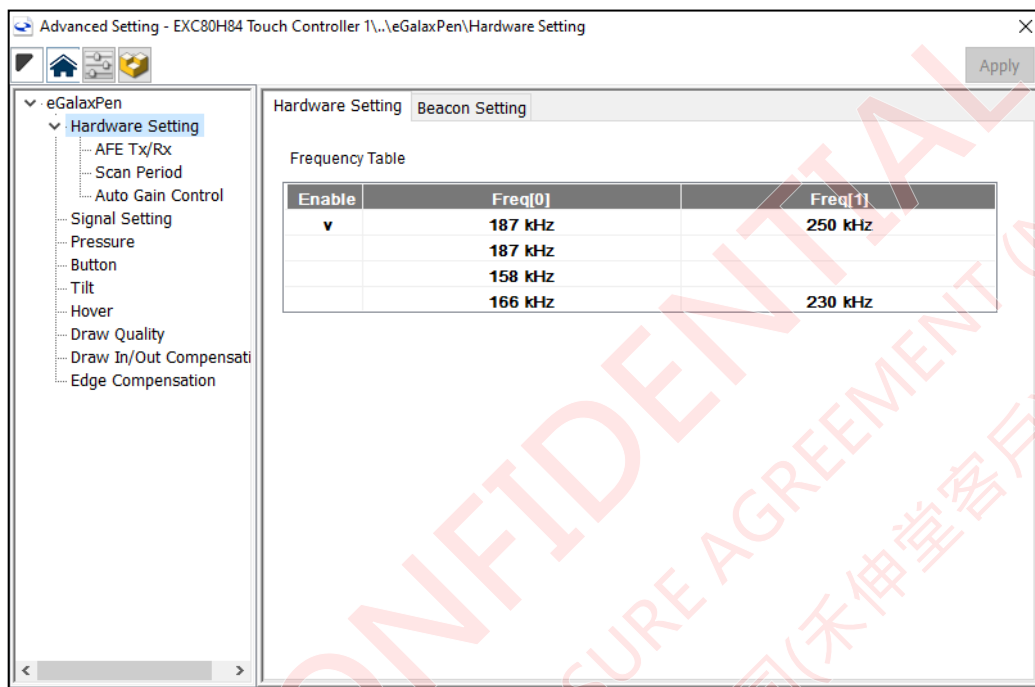
Scan Management



Scan Management	
※ Description ※	Initially, the controller will be in W2 state. After detecting eGalaxPen on the panel, the controller will switch to W0 state. If the controller does not detect any eGalaxPen signal for a while (Idle to Next State), the touch system will switch to a higher Working State and change the Scan Period .
Dynamic Scan Scaling	Enable Dynamic Scan Scaling .
Working State	Working State is available from W0~W4 .
Scan Period	The scan period of eGalaxPen
Idle to Next State	The amount of time the controller stays in the current Working State .
Time Unit - Scan Period (ms)	The time unit setting for Scan Period .
Time Unit - Idle To Next State (ms)	The time unit setting for Idle to Next State .

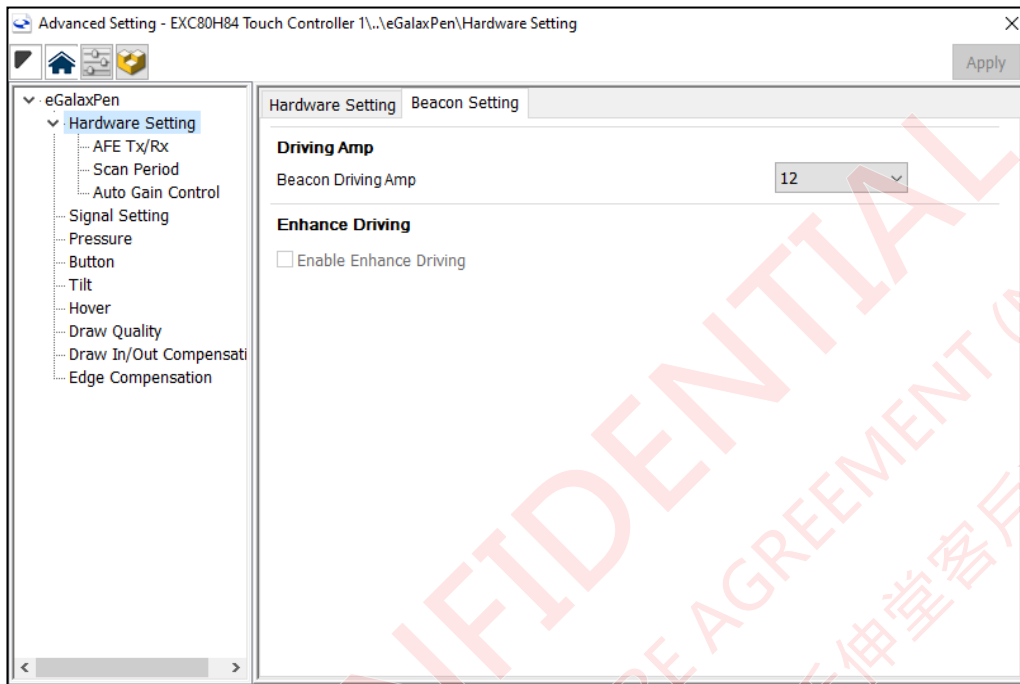
4.1.B. eGalaxPen \ Hardware Setting

Hardware Setting



Frequency Table	
Frequency Table	eGalaxPen working frequency set
MeasureCount	eGalaxPen signal measure count setting When SNR is insufficient, increasing MeasureCount may improve SNR. MeasureCount setting within eGalaxPen also needs to be adjusted accordingly.
Signal Mode	Different Signal Mode can be selected By default, Signal Mode is in EETI mode. We do not recommend changing Signal Mode unless any unexpected issue occurs; EETI RD will recommend the strategies for change.

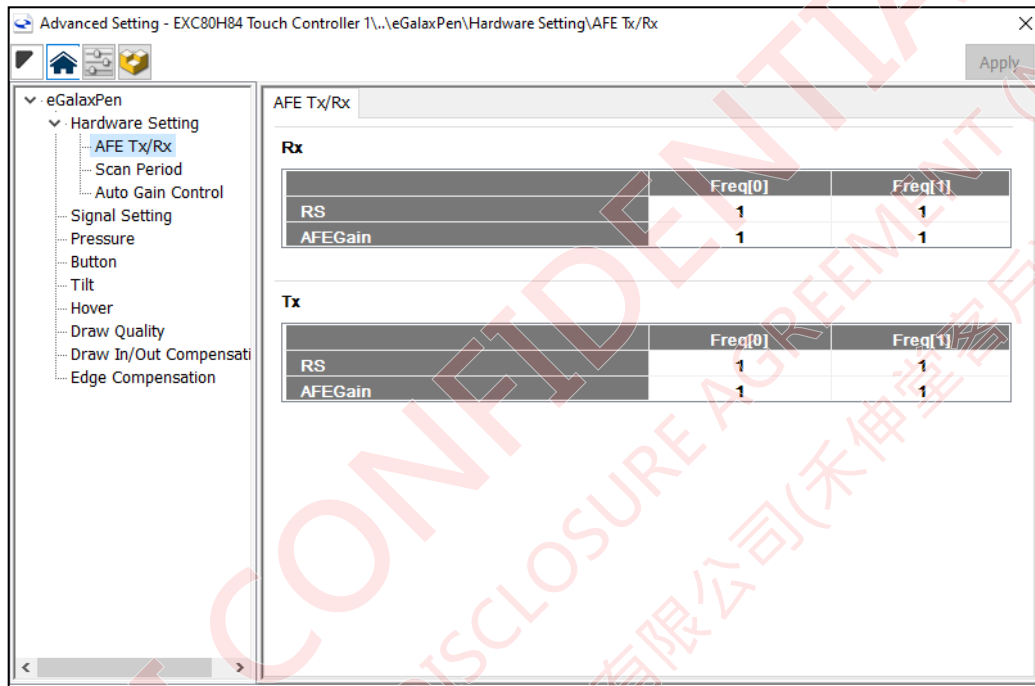
Beacon Setting



Driving Amp	
Beacon Driving Amp	The amplitude level of the beacon signal
Enhance Driving	
Enable Enhance Driving	<p>If this feature is enabled, both Tx and Rx channels will drive the beacon signal. This feature will strengthen the beacon signal, but the power consumption will be relatively high, and the EMI interference will also increase.</p> <p>WHEN TO USE 1: When hovering eGalaxPen over the panel, if the height between eGalaxPen and the touch panel is too high, making hover state difficult to trigger, enabling this feature may improve the situation.</p> <p>WHEN TO USE 2 : When writing eGalaxPen with palm, if the line drops too often, enabling this feature may improve the situation.</p>

i. **Hardware Setting \ AFE Tx/Rx****AFE Tx/Rx**

When detecting **eGalaxPen**, both Tx and Rx of the touch sensor will be served as receivers to receive the signal driven by **eGalaxPen**. You can configure the following **AFE Tx/Rx** settings on this page.

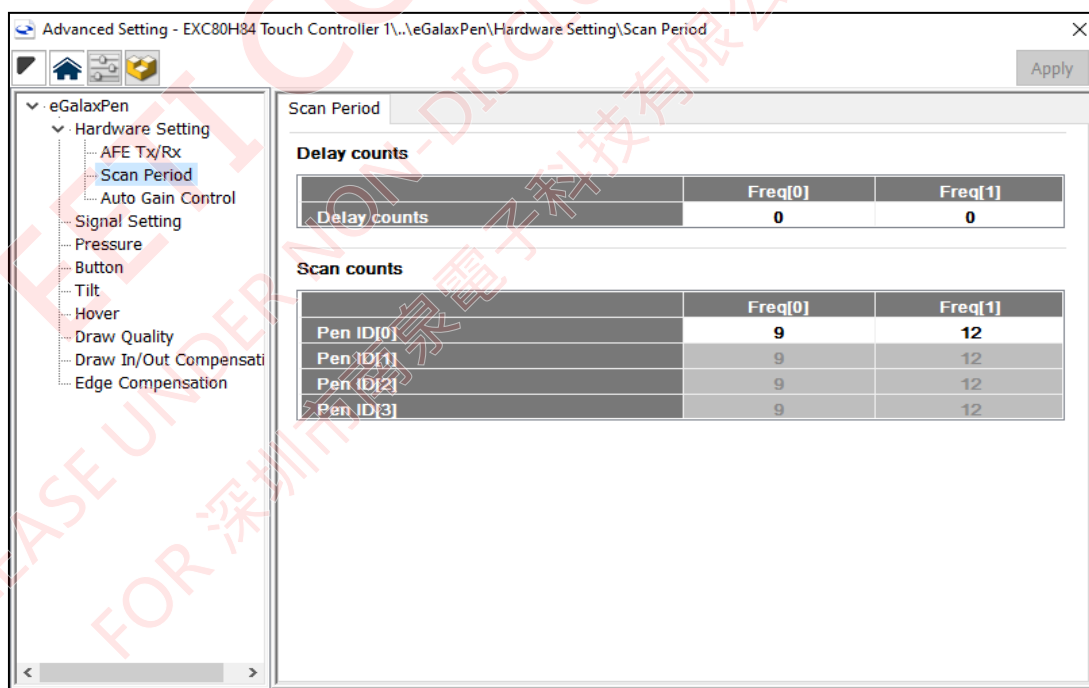
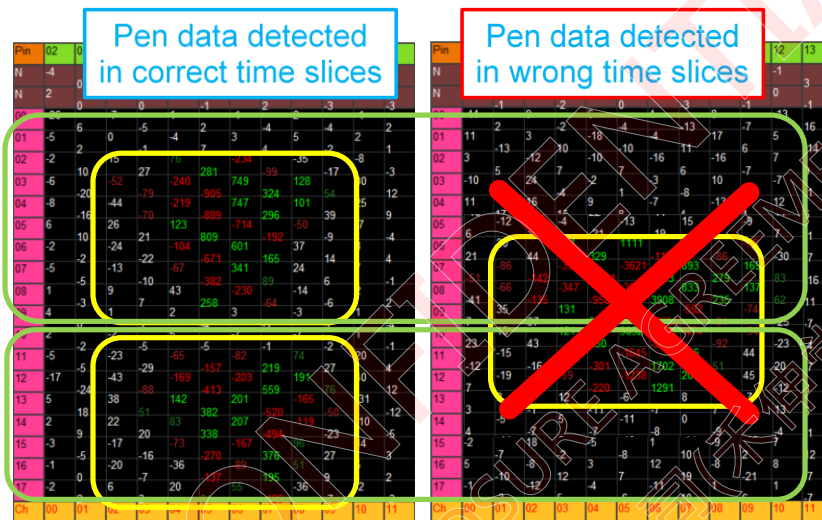


Rx / Tx	
RS	eGalaxPen anti-interference capability settings Both signal and interference will be decreased when this parameter is smaller, which may increase SNR and lower the risk of AD1 % saturation.
AFEGain	The gain of eGalaxPen front-end signal amplifier settings If this parameter is smaller, the signal will be larger, but the risk of AD1 % saturation will increase.

ii. Hardware Setting \ Scan Period

Scan Period

Scan Period depends on the duration of scanning each eGalaxPen signal. When using eGalaxPen, its signal should be within a proper time slice range. The start time and the duration can be determined by setting Delay Counts and Scan Counts.



Delay counts

Delay counts	Delay counts can control the start time of scanning the eGalaxPen signal.
--------------	---

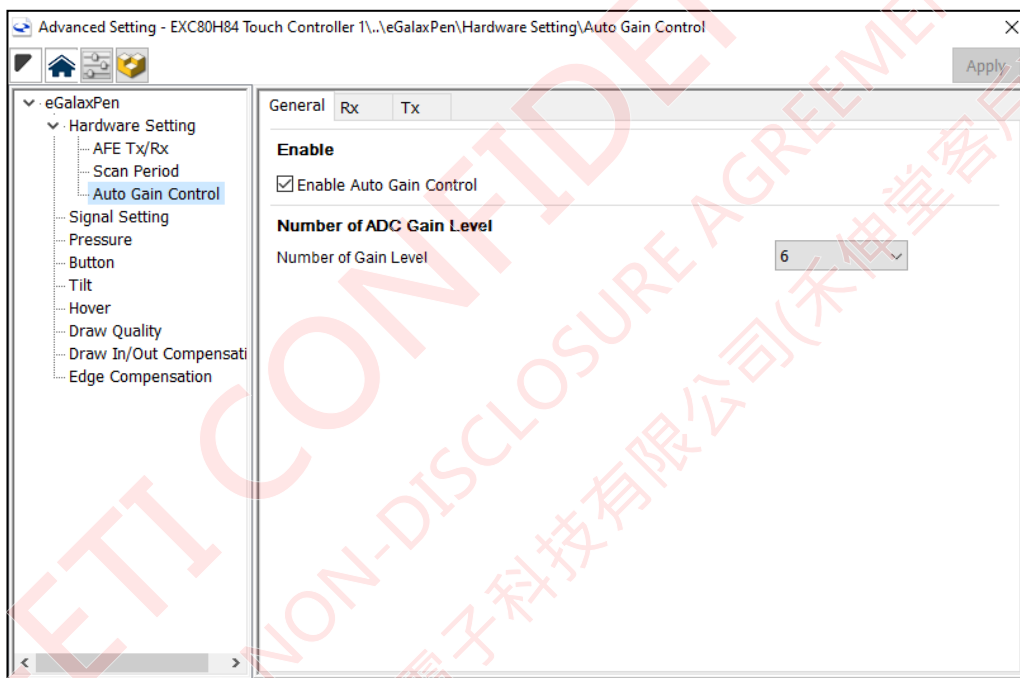
Scan counts

Scan counts	Set the number of Time slices for scanning each eGalaxPen signal.
-------------	--

iii. Hardware Setting \ Auto Gain Control

Auto Gain Control empowers the EETI controller to automatically select the gain level based on the received signal from **eGalaxPen** and to apply the selected gain level back to the received signal. You can set at most eight gain levels for **Auto Gain Control**. Before **eGalaxPen** is detected, the controller will be in the maximum gain level; After the controller detects **eGalaxPen**, the controller will regulate the **eGalaxPen** signal to a proper level through this feature.

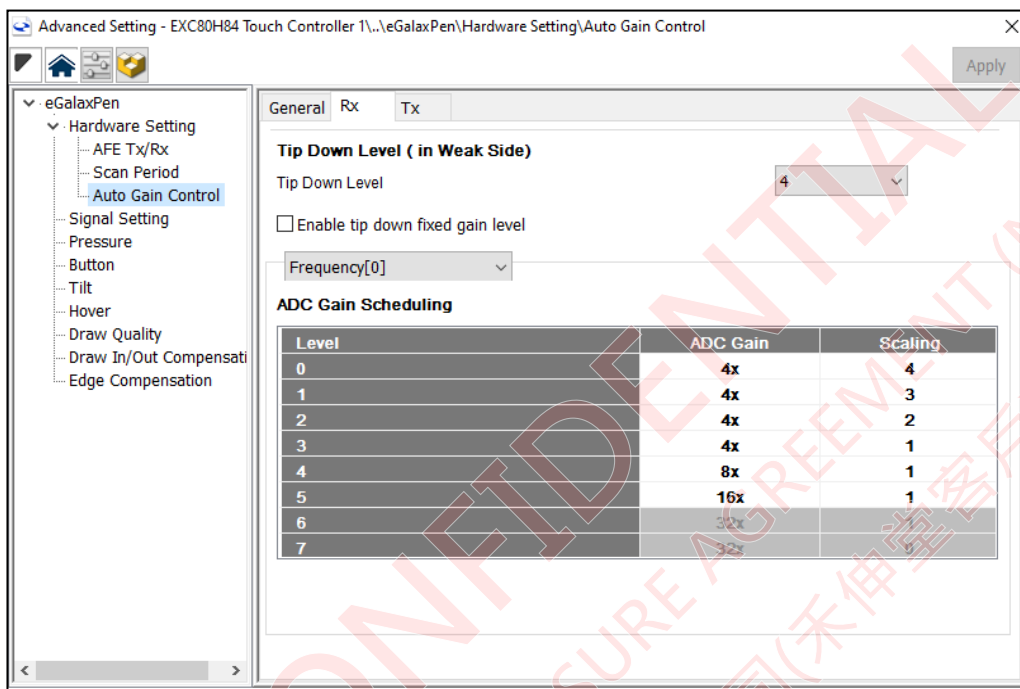
General



Enable	
Enable Auto Gain Control	Enable the Auto Gain Control feature.
Number of ADC Gain Level	
Number of Gain Level	You can set at most eight gain levels for Auto Gain Control . The latter gain level value should be twice the previous gain level value.

Rx

The table below shows the Rx gain level value setting for each gain level.

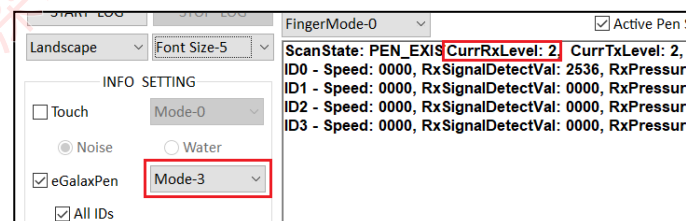


Tip Down Level (in Weak Side)

Tip Down Level

When an eGalaxPen contacts the touch screen, this level will be applied to the eGalaxPen signal immediately.

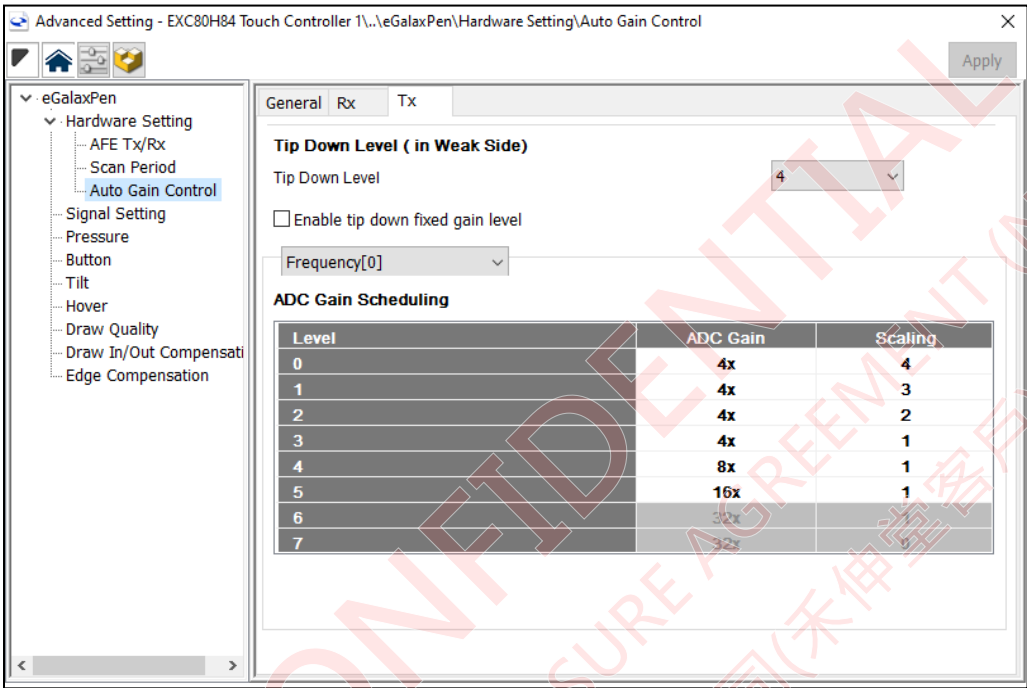
※ To set Tip Down Level, please run eGalaxTuner, select eGalaxPen Mode-3, put the tip of eGalaxPen on the panel and find the weakest signal location on the panel. After finding the weakest signal location, please refer to CurrRxLevel in Firmware Status Window and set Tip Down Level to this value. Take the following setting page as an example. The Tip Down Level needs to be set as 2.

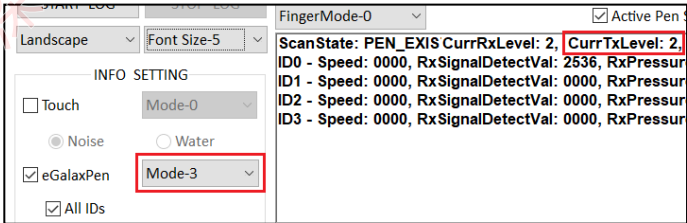


Enable tip down fixed gain level	<p>If enabled, when Tip Down, the gain Level will be fixed at the Tip Down Level.</p> <p>When drawing with several eGalaxPen, if the strongest and the weakest signal is significantly different, Auto Gain may not perform as expected. Enable this feature with appropriate parameter settings can optimize the multi-pen drawing experience.</p>
ADC Gain Scheduling	
Level 0 ~ 7	<p>Each gain level value is defined by ADC Gain and Scaling.</p> <p>※ The latter gain level value should be twice than the previous one.</p>

Tx

The table below shows the Tx gain level value setting for each gain level.



Tip Down Level (in Weak Side)	
Tip Down Level	Once eGalaxPen contacts the touch screen, this level will apply immediately to the eGalaxPen signal.
	※ To set Tip Down Level , please run eGalaxTuner , select eGalaxPen Mode-3 , put eGalaxPen tip on the panel and find the weakest signal area on the panel. After finding the weakest signal area, please refer to CurrTxLevel in Firmware Status Window and set Tip Down Level to this value. Take the following setting page as an example. Tip Down Level needs to be set to 2.
	

Enable tip down fixed gain level	<p>If enabled, when Tip Down, the gain Level will be fixed at the Tip Down Level.</p> <p>When drawing with several eGalaxPen, if the strongest and the weakest signal is significantly different, Auto Gain may not perform as expected. Enable this feature with appropriate parameter settings can optimize the multi-pen drawing experience.</p>
ADC Gain Scheduling	
Level 0 ~ 7	<p>Each gain level value is defined by ADC Gain and Scaling.</p> <p>※ The latter gain level value should be twice the previous one.</p>

4.1.C. eGalaxPen \ Signal Setting

On this signal setting page, you can configure the **eGalaxPen Hover** threshold value and **Tip down** threshold value.

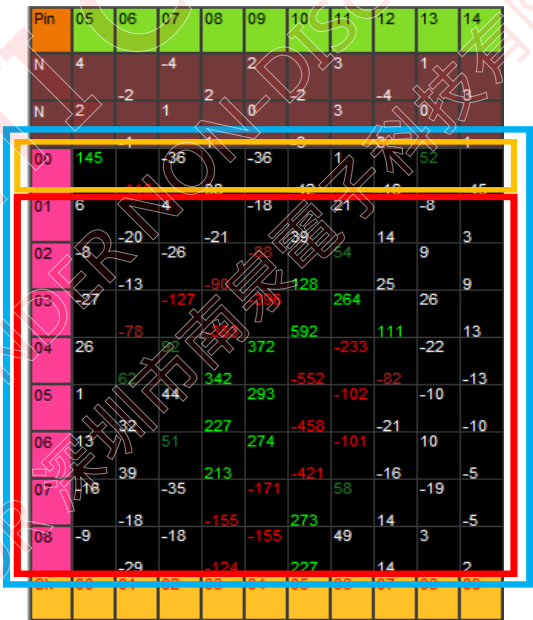
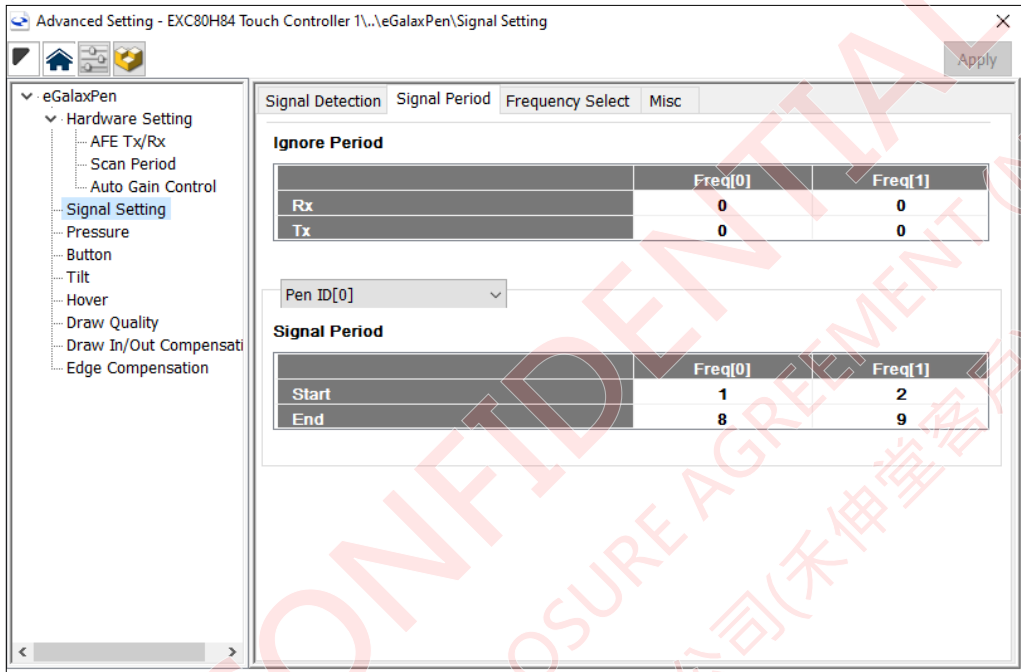
Signal Detection

Hover Detect	
SNR (1/16)	If the SNR of an eGalaxPen signal is less than this threshold, this eGalaxPen signal will be ignored.
Threshold – Tx / Rx	eGalaxPen signal detection threshold setting If an eGalaxPen signal is larger than this threshold, Hover coordinates of this eGalaxPen signal will be reported.
Tip Down Detect	
SNR (1/16)	If the SNR of an eGalaxPen signal is less than this threshold, the pressure value of this eGalaxPen signal will be ignored.
Threshold – Tx / Rx	eGalaxPen pressure detection threshold setting If an eGalaxPen pressure signal is larger than this threshold, Tip coordinates of this signal will be reported.
Detect Policy	Select the method of detecting the eGalaxPen pressure value.

Ignore edge channel (SNR)	
Ignore edge channel count	<p>For some touch panels, channels on the edge may be more susceptible to noise. Configuring this setting can increase the controller's reliability in detecting the eGalaxPen signal.</p> <p>※ Please note that only one of the Tx or Rx can be set as Ignore edge channel.</p>

Signal Period

On this **Signal Setting** page, you can set the range of time slices for each eGalaxPen.



Ignore Period

Scan Period

Signal Period

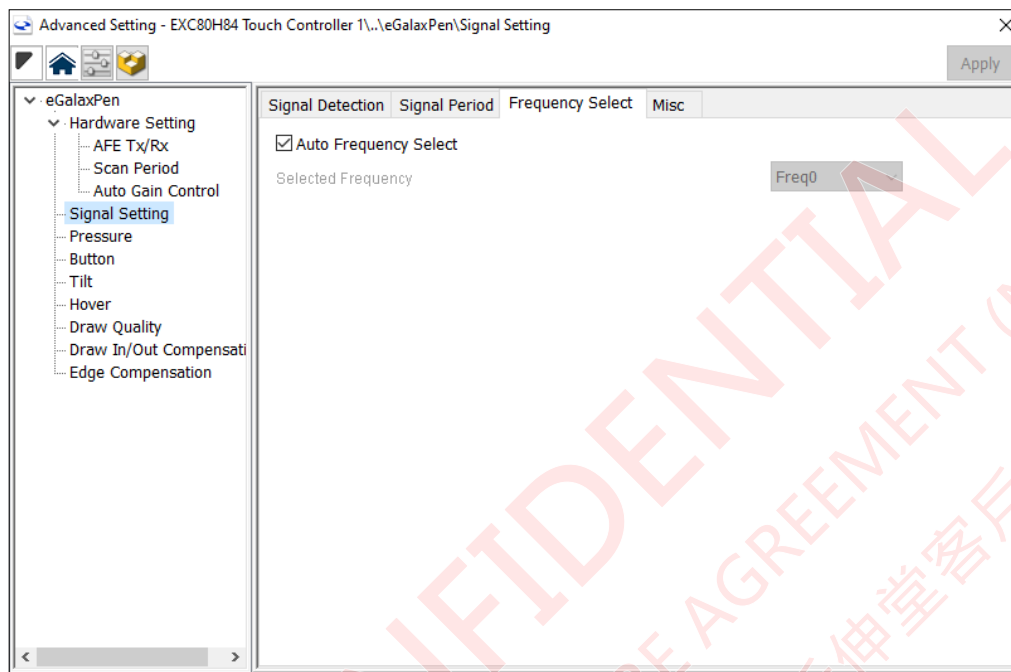
Signal Period

※ Description ※

Take the above image as an example. Its **Ignore Period** of **Freq0** is 0, and its **Signal Period** is 1 ~ 8.

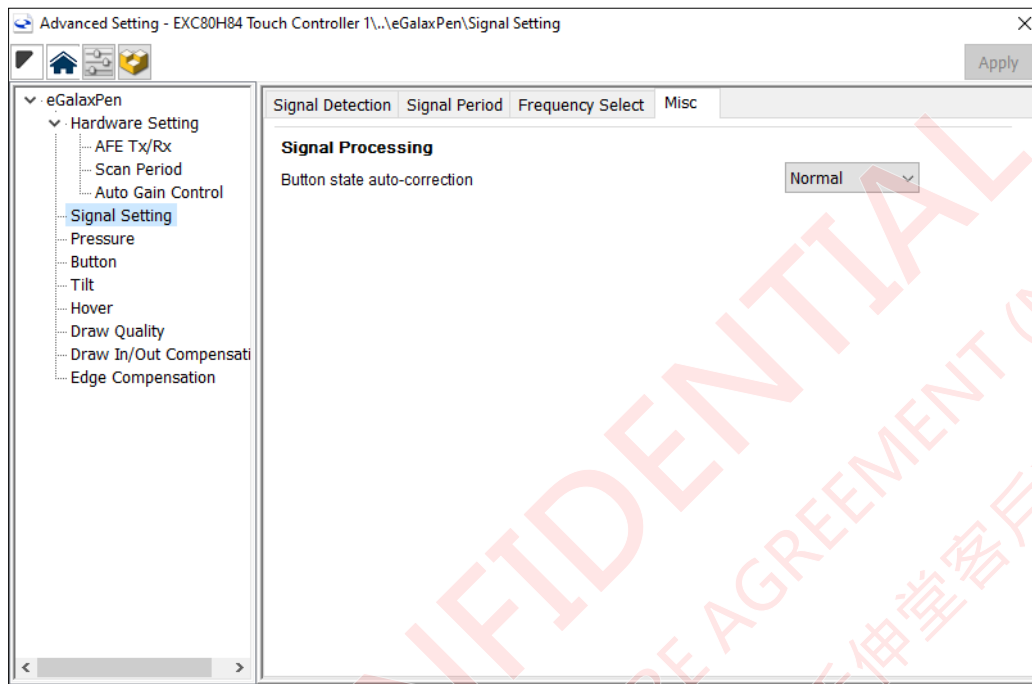
Ignore Period	
Rx / Tx	Signals within Ignore Period will be ignored. Fill in 0 means that time slice 0 will be ignored. Fill in 1 means that time slice :0~1 will be ignored, and so on.
Signal Period	
Start / End	A signal within the range of Signal Period will be a valid eGalaxPen signal.

Frequency Select



Frequency Select	
Auto Frequency Select	Enable / Disable Auto Frequency Select feature
Selected Frequency	When Auto Frequency Select is disabled, the default working frequency will be in use. The default working frequency can be switched by the drop-down menu.

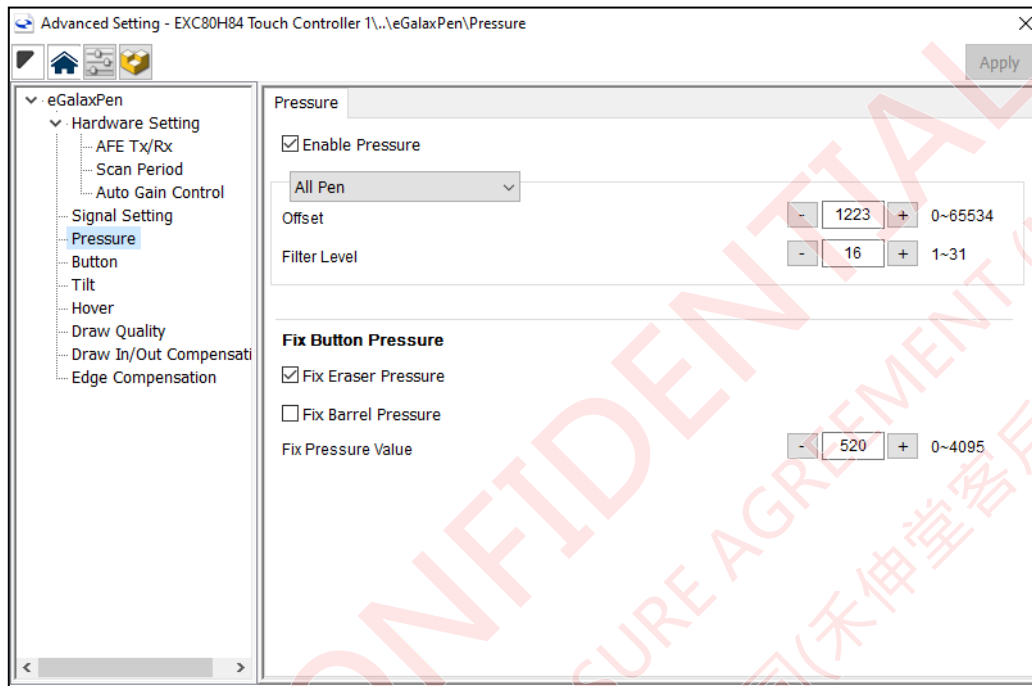
Misc



Signal Processing	
Button state auto-correction	Normal : By default, Tx and Rx will determine Button State independently.
	Auto: When both Tx and Rx have a risk of determining Button Pattern incorrectly, enabling this feature may correct this situation. In a noisy environment, enabling this feature may improve the performance.
	Fixed Tx : When only Rx has a risk of determining Button Pattern incorrectly due to noise, enabling this feature may correct this situation. This feature is designed for a noisy environment.
	Fixed Rx : When only Tx has a risk of determining Button Pattern incorrectly due to noise, enabling this feature may correct this situation. This feature is designed for a noisy environment.

4.1.D. eGalaxPen \ Pressure

Pressure

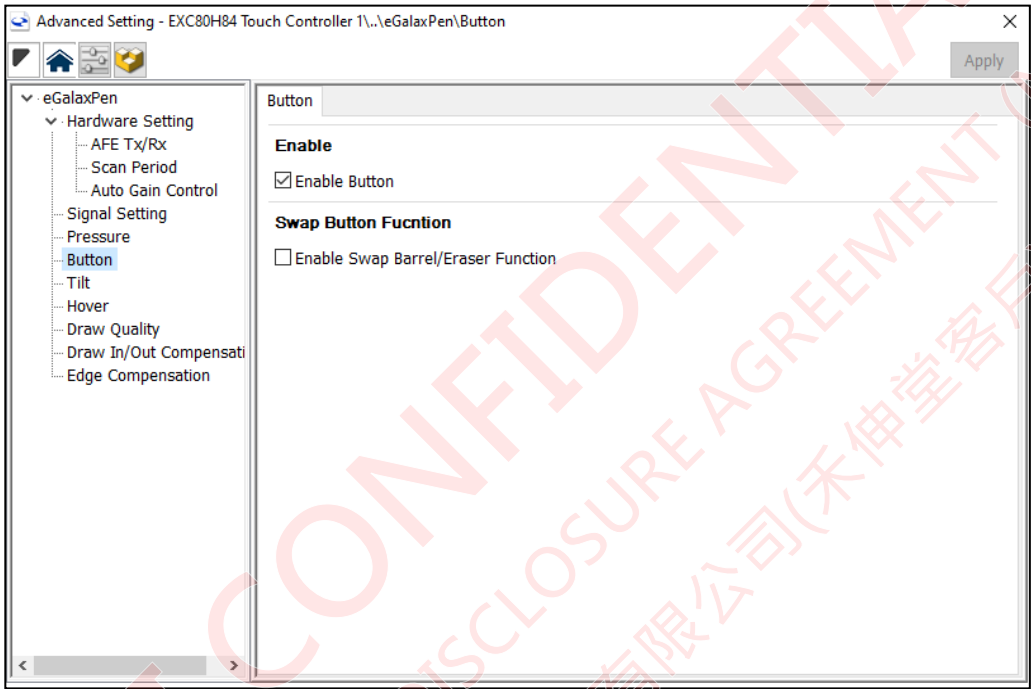


Pressure	
Enable Pressure	Enable the eGalaxPen pressure sensing feature.
Offset	Pressure correction parameter
Filter Level	Control the changing rate of the pressure value (line weight). The larger the Filter Level , the lower the pressure value changing rate. (Maximum: 31) The smaller the Filter Level , the higher the pressure value changing rate. (Minimum: 1)
Fix Button Pressure	
Fix Eraser Pressure	Lock the pressure value of the Eraser button.
Fix Barrel Pressure	Lock the pressure value of the Barrel button.
Fix Pressure Value	Configure the fixed pressure value.

4.1.E. eGalaxPen \ Button

eGalaxPen has two buttons on the side. The **Eraser** is the button near the pen tip, and the **Barrel** is the button away from the pen tip. The feature of both buttons can be adjusted by the following settings.

Button

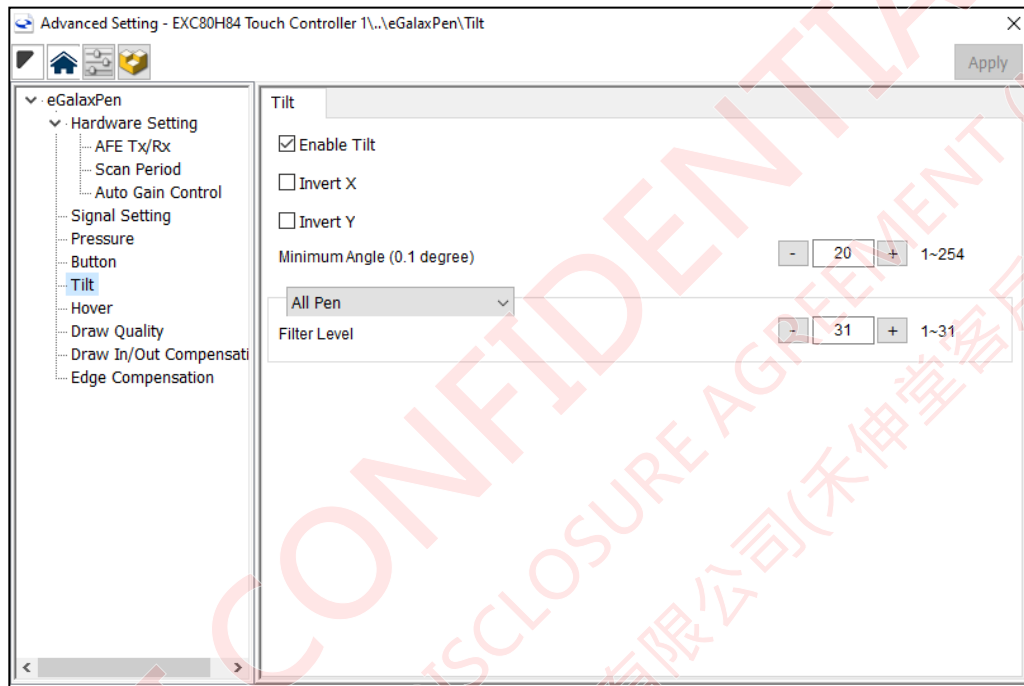


Enable	
Enable Button	Enable / Disable Button feature.
Swap Button Function	
Enable Swap Barrel/Eraser Function	Swap the feature of the Barrel button and Eraser button.

4.1.F. eGalaxPen \ Tilt

eGalaxPen supports the **Tilt** sensing feature. After **Tilt** sensing is enabled, when drawing in the software that supports **Tilt** sensing, different brush effects can be changed by different tilt angles.

Tilt

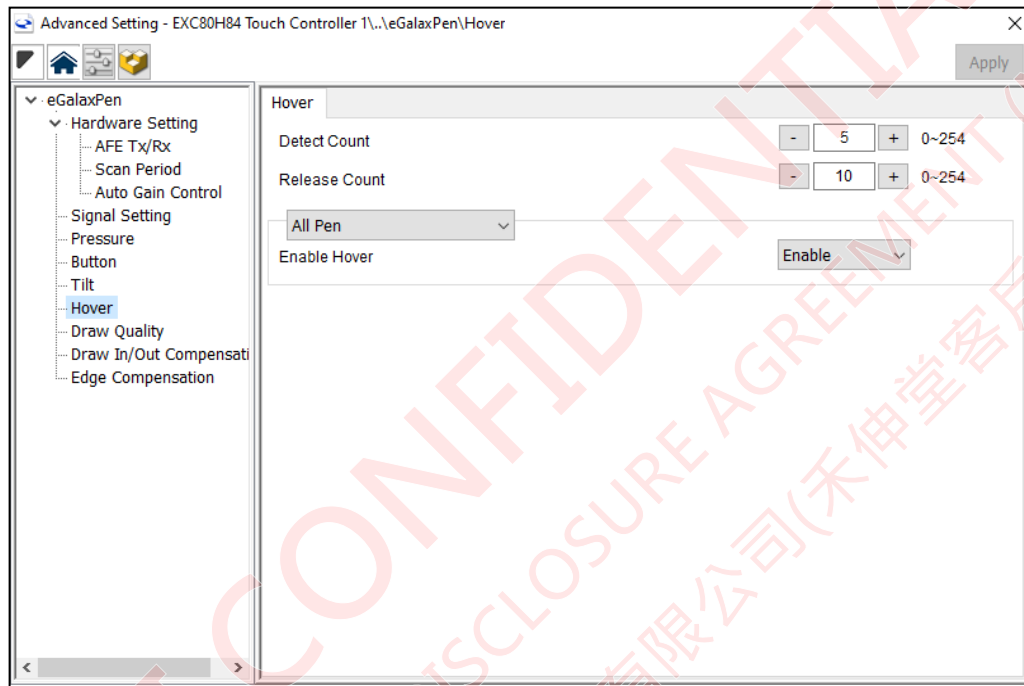


Tilt	
Enable Tilt	Enable the Tilt sensing feature.
Invert X	Invert the X tilt angle.
Invert Y	Invert the Y tilt angle.
Minimum Angle (0.1 degree)	Set the minimum variation of tilt angle.
Filter Level	<p>Control the sensitivity of Tilt variation.</p> <p>The higher the Filter Level, the lower the Tilt value changing rate. (Maximum: 31)</p> <p>The smaller the Filter Level, the higher the Tilt value changing rate. (Minimum: 1)</p>

4.1.G. eGalaxPen \ Hover

eGalaxPen supports the **Hover** feature. This feature can help to predict the position of **eGalaxPen** before **eGalaxPen** tips on the panel, which can provide a better writing and drawing experience.

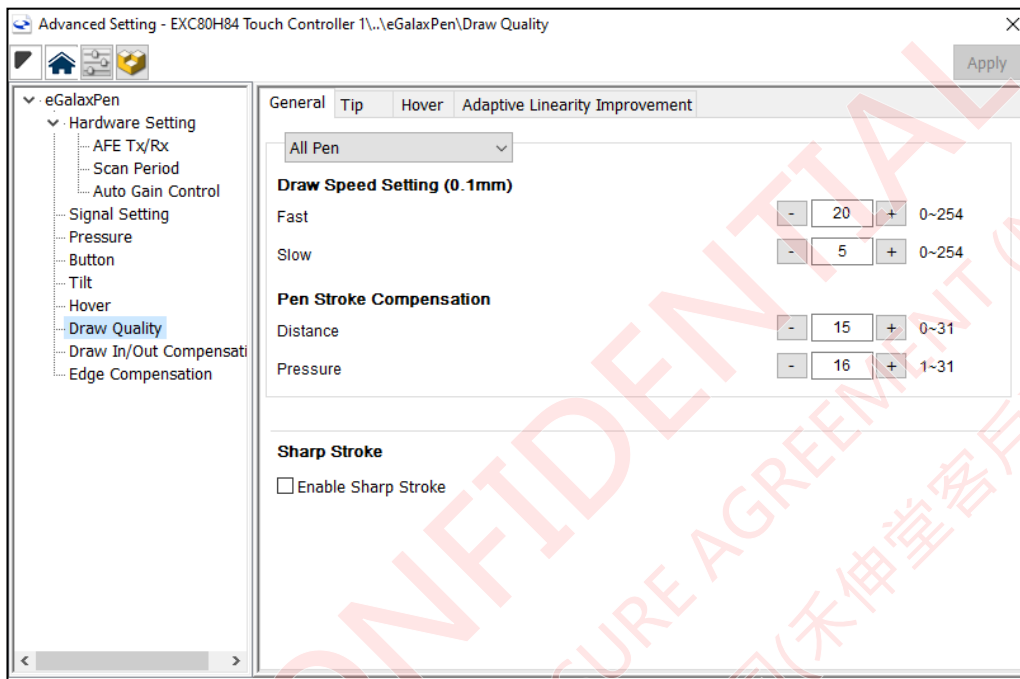
Hover

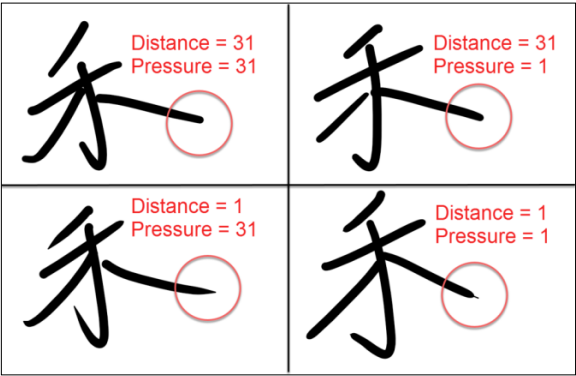


Hover	
Detect Count	If the number of valid frames exceeds Detect Count , hovering coordinates will be reported to the host system.
Release Count	For each Hover event, if the number of invalid frames of the corresponding Hover event exceeds Release Count , the hovering coordinates will stop being reported to the host system.
Enable Hover	Enable / Disable Hover feature.

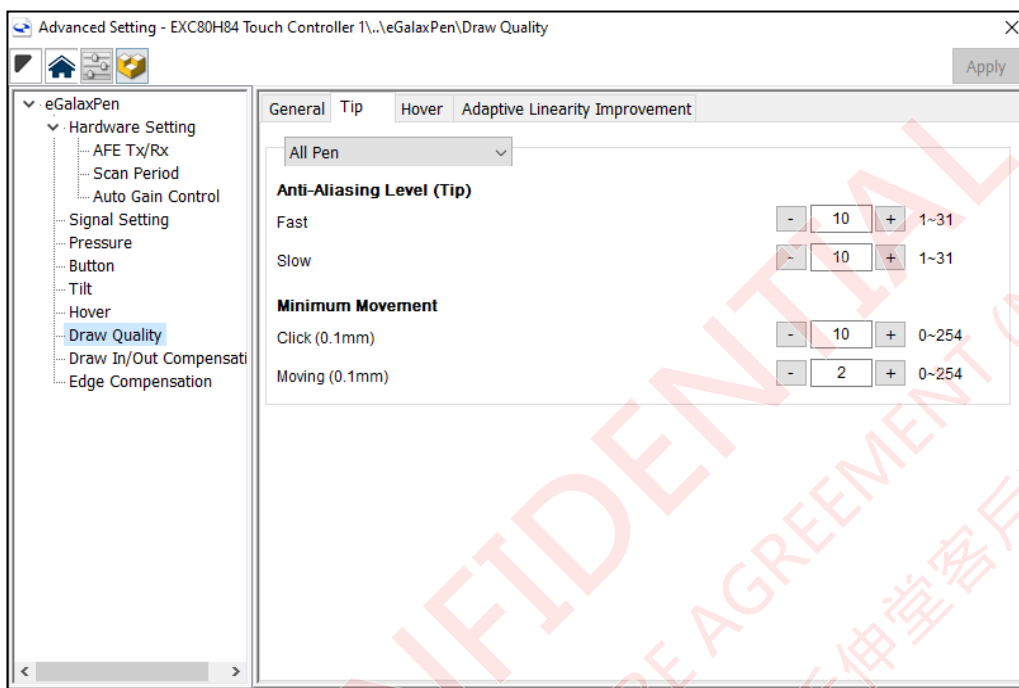
4.1.H. eGalaxPen \ Draw Quality

General



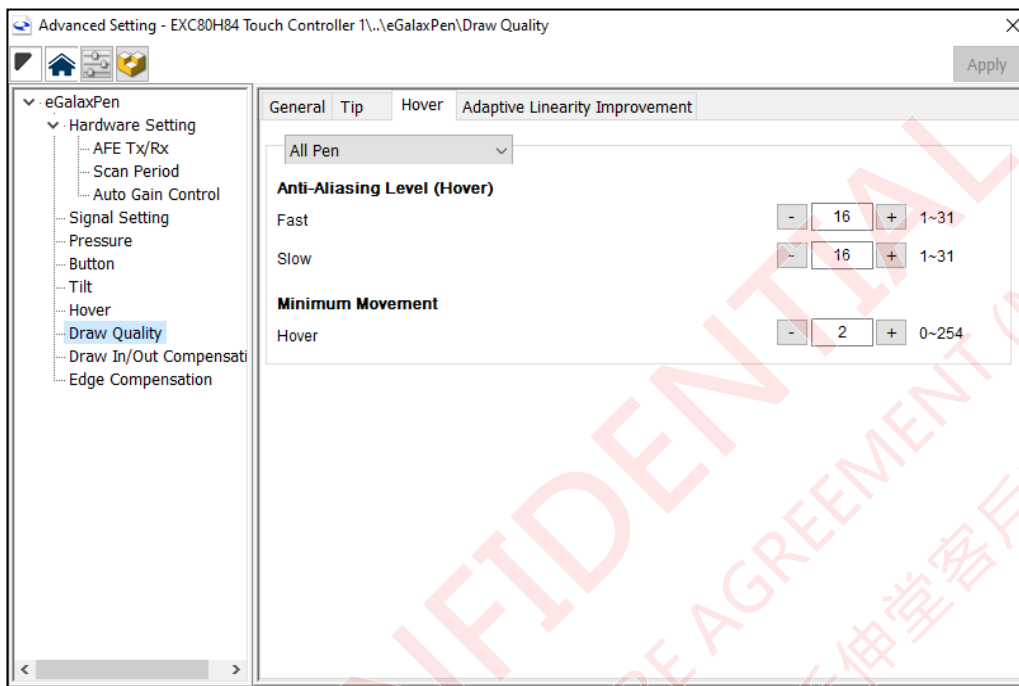
Draw Speed Setting (0.1mm)	
Fast	Define high drawing speed (Unit: 0.1mm / s)
Slow	Define low drawing speed (Unit: 0.1mm / s)
Pen Stroke Compensation	
Distance	<p>Distance is the parameter that controls the length of a pen stroke that will last after the eGalaxPen lifts off.</p> <p>The smaller the Distance value, the longer the length.</p>
Pressure	<p>The line weight changing rate of the pen stroke. The smaller the Pressure value, the faster the changing rate of the line weight.</p> <div>  </div>
Sharp Stroke	
Enable Sharp Stroke	Enable Sharp Stroke to converge the pen stroke to its sharpest level.

Tip



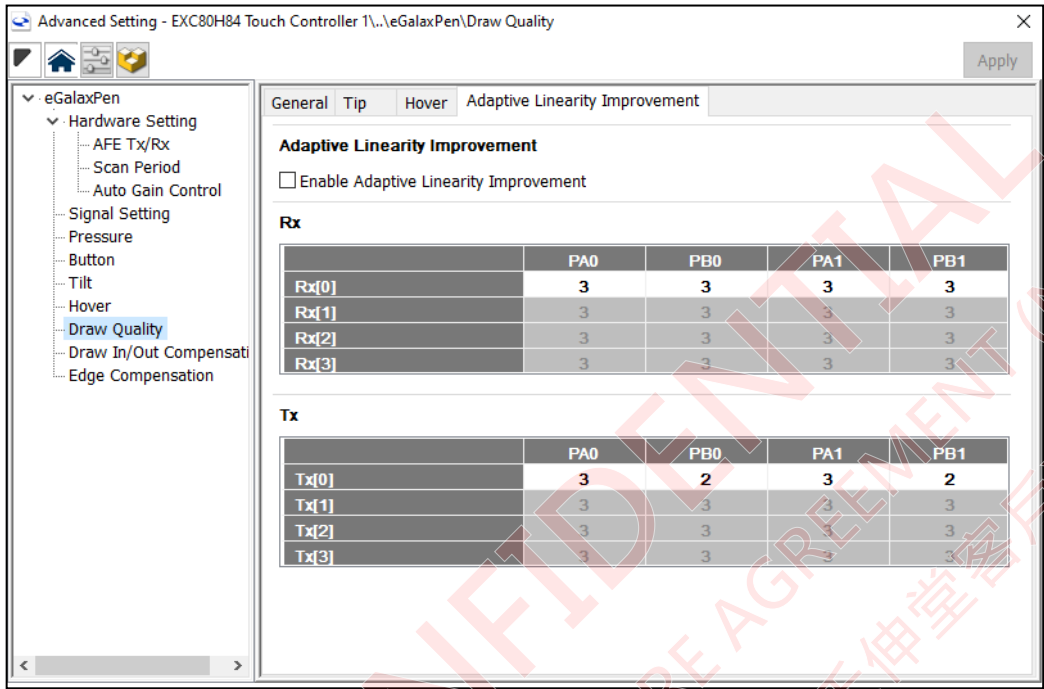
Anti-Aliasing Level (Tip)	
Fast	Anti-aliasing level for high drawing speed
Slow	Anti-aliasing level for low drawing speed
Minimum Movement	
Click (0.1mm)	Minimum movement for the first-down eGalaxPen input (Unit: 0.1 mm)
Moving (0.1mm)	Minimum movement for eGalaxPen drawing (Unit: 0.1 mm)

Hover



Anti-Aliasing Level (Hover)	
Fast	Anti-aliasing level for high-speed hovering movement
Slow	Anti-aliasing level for low-speed hovering movement
Minimum Movement	
Hover	Minimum movement for hovering

Adaptive Linearity Improvement

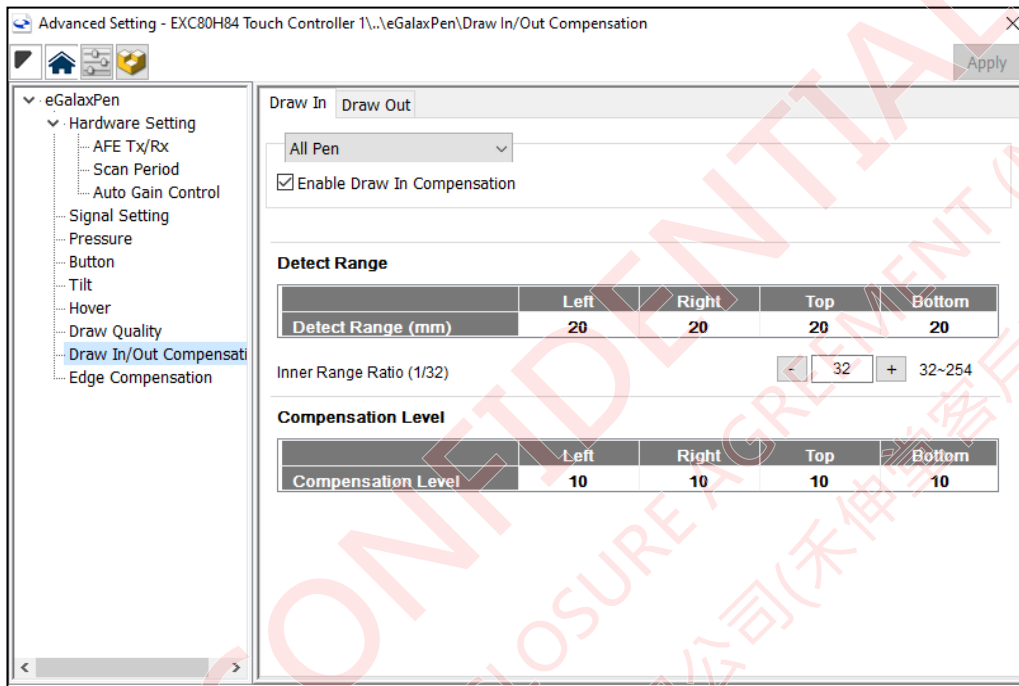


Adaptive Linearity Improvement	
Enable Adaptive Linearity Improvement	Enable Adaptive Linearity Improvement
Rx[#] / Tx[#]	
PA0 / PB0 / PA1 / PB1	<p>Linearity Improvement for different eGalaxPen tilting angles</p> <p>PA and PB represent the Adaptive Linearity Improvement coefficient Part A. and Part B, respectively.</p> <p>[0~3] represents the tilting angle of 15, 30, 45, and 60</p> <p>WHEN TO USE: This feature can be used in a high linearity performance requirement application.</p>

4.1.1. eGalaxPen \ Draw In/Out Compensation

Draw In

EETI controller can optimize the eGalaxPen Draw In experience by tracking the Draw In behavior.

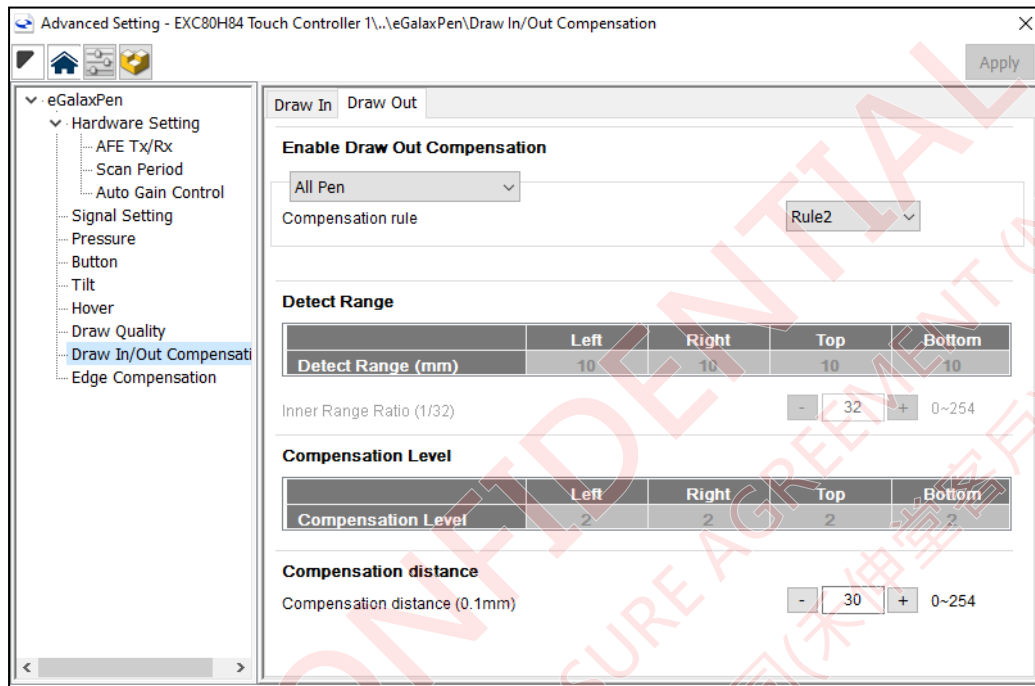


Draw In	
※ Description ※	<p>In a normal situation, Inner Range will be set larger than Detect Range.</p>
Enable Draw In Compensation	Enable Draw In Compensation feature
Detect Range	
Detect Range	Define the Detect Range for eGalaxPen Draw In Compensation.
Inner Range Rate (1/32)	<p>Define the Inner Range for eGalaxPen Draw In Compensation.</p> <p>Inner Range is calculated as Detect Range * Inner Range Rate (1/32).</p>

Compensation Level	
Compensation Level	Increasing the Compensation Level will make the eGalaxPen point close to the edge. Decreasing the Compensation Level will make the eGalaxPen point away from the edge.

Draw Out

EETI controller can optimize the **eGalaxPen Draw Out** experience by tracking the **Draw Out** behavior.



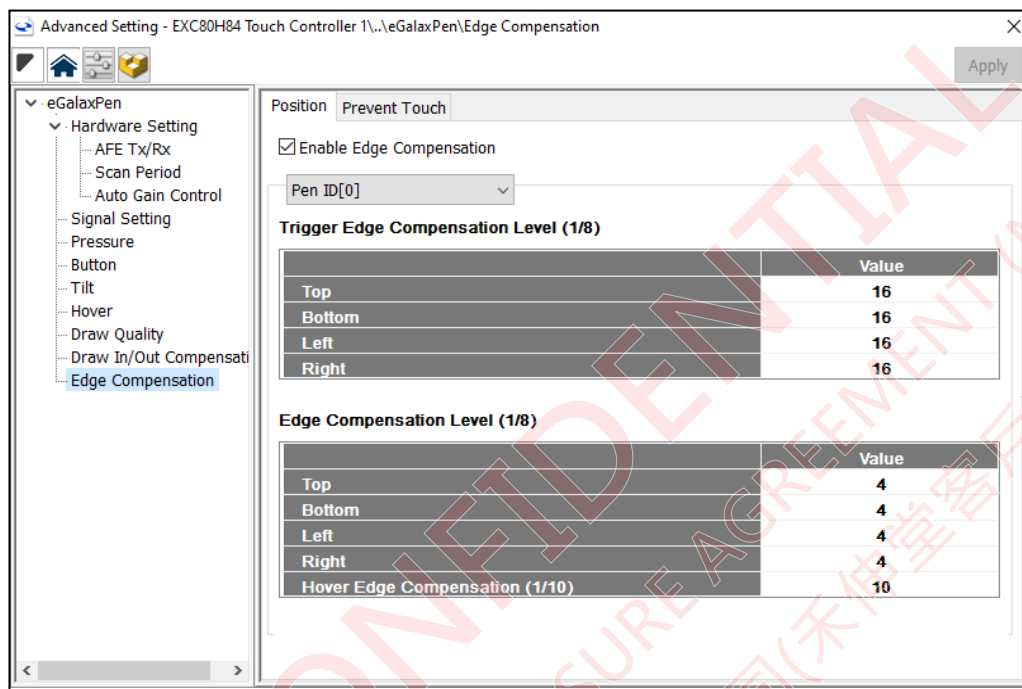
Enable Draw Out Compensation	
※ Description ※	In a normal situation, Inner Range will be set larger than Detect Range .
Compensation rule	Rule1 – The same compensation settings as Draw In Rule2 –The drawing speed and Prevent Touch settings will determine if compensation points will be reported.
Detect Range ※ Detect Range can only be adjusted when Compensation rule is set to Rule1	
Detect Range	Define the Detect Range for eGalaxPen Draw Out Compensation .
Inner Range Rate (1/32)	Define the Inner Range for eGalaxPen Draw Out Compensation . Inner Range is calculated as Detect Range * Inner Range Rate (1/32)

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Compensation Level	
※ Compensation Level can only be adjusted when Compensation rule is set to Rule1	
Compensation Level	Increasing the Compensation Level can make the eGalaxPen point close to the edge. Decreasing the Compensation Level can make the eGalaxPen point away from the edge.
Compensation distance	
※ Compensation distance can only be adjusted when Compensation rule is set to Rule1	
Compensation distance (Unit: 0.1mm)	If the distance value between two touch points on the edge is larger than this threshold, compensation points will be reported. (Unit: 0.1mm)

4.1.J. eGalaxPen \ Edge Compensation

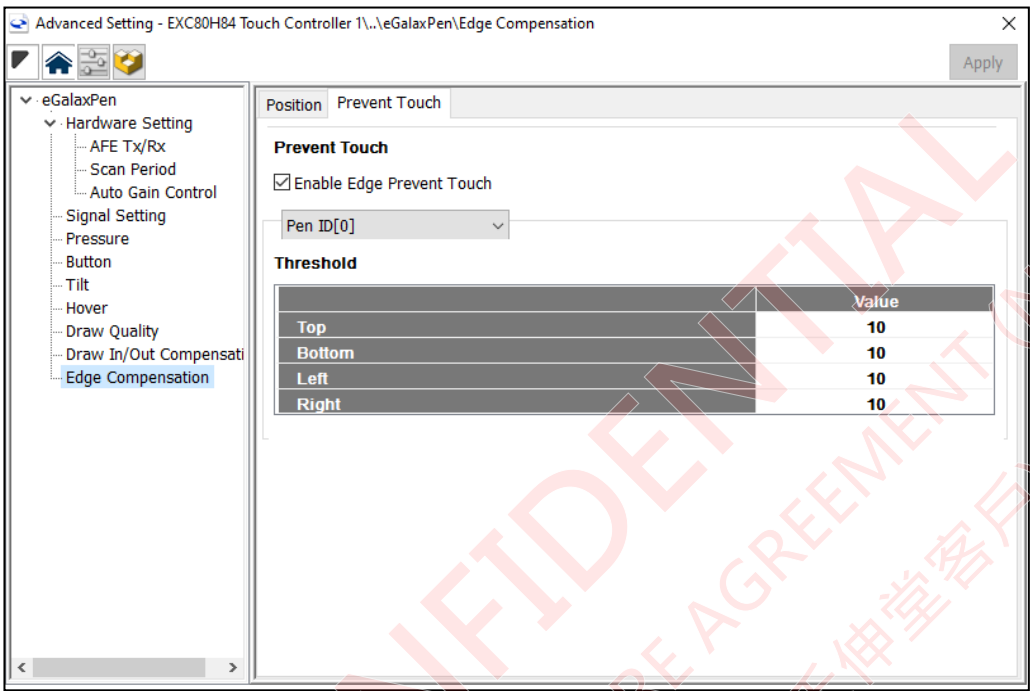
Position



Position	
※ Description ※	
Enable Edge Compensation	Enable the Edge Compensation feature.
Trigger Edge Compensation TH (1/8)	The edge area of triggering Edge Compensation Increasing this parameter will reduce the range of edge compensation. Decreasing this parameter will enlarge the range of edge compensation.

Edge Compensation Level (1/8)	Increasing this compensation level can make the eGalaxPen point close to the edge. Decreasing the compensation level can make the eGalaxPen point away from the edge.
Hover Edge Compensation (1/10)	Compensation Level for Hover state.

Prevent Touch



Prevent Touch	
Enable Edge Prevent Touch	<p>Enable Edge Prevent Touch to block any point within the border area. Take the following image as an example, drawing with eGalaxPen on the border and observing Tx/RxEdgeVal to set the Threshold for the four edges.</p> <div data-bbox="507 1440 758 1592"> <p>INFO SETTING</p> <p><input type="checkbox"/> Touch Mode-0</p> <p><input checked="" type="radio"/> Noise <input type="radio"/> Water</p> <p><input checked="" type="checkbox"/> eGalaxPen Mode-3</p> <p><input checked="" type="checkbox"/> All IDs</p> </div> <div data-bbox="826 1283 1318 1592"> </div> <div data-bbox="507 1630 1318 1727"> <p>ScanState: PEN_EXIST, CurrRxLevel: 2, CurrTxLevel: 2, FreqIndex: 0, ID0 - Speed: 0000, RxSignalDetectVal: 2192, RxPressureDetectVal: 0776, RxEdgeVal: 0800, TxSignalDetectVal: 1112, TxPressureDetectVal: 0296, TxEdgeVal: 0224, ID1 - Speed: 0000, RxSignalDetectVal: 0000, RxPressureDetectVal: 0000, RxEdgeVal: 0000, TxSignalDetectVal: 0000, TxPressureDetectVal: 0000, TxEdgeVal: 0000, ID2 - Speed: 0000, RxSignalDetectVal: 0000, RxPressureDetectVal: 0000, RxEdgeVal: 0000, TxSignalDetectVal: 0000, TxPressureDetectVal: 0000, TxEdgeVal: 0000, ID3 - Speed: 0000, RxSignalDetectVal: 0000, RxPressureDetectVal: 0000, RxEdgeVal: 0000, TxSignalDetectVal: 0000, TxPressureDetectVal: 0000, TxEdgeVal: 0000,</p> </div>
Threshold	<p>Edge Prevent Touch threshold</p> <p>In the edge area, if an eGalaxPen signal is less than this Threshold, this signal will not be reported.</p>



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