

**CONFIDENTIAL B**

# LCE拉太强导致的人脸contour

6771上AE 和 LCE有了link，背光景下为了抑制过曝区，会降低AE的作用，再用faceLCE将face拉到target，LCE拉太强导致如下现象



Not ok

nice

# LCE拉太强导致的人脸contour

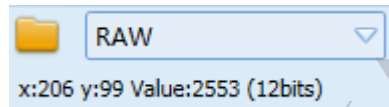
6771上AE 和 LCE有了link，背光景下为了抑制过曝区，会降低AE的作用，再用faceLCE将face拉到target，LCE拉太强会导致contour现象

Solution :

ImagiqSimulator 打开raw dump下的.y文件

031944579-0000-0000-sub\_384x286\_12\_s0.y

鼠标放在contour 处，会看到LCE的 input value，选择对应的输出段fine tuning



LCE P		LCE O	
P0	0	O0	0
P1	2231	O1	2489
P2	2334	O2	2577
P3	2654	O3	2866
P4	2909	O4	2936
P5	3694	O5	3694
P6	3695	O6	3695
P7	3696	O7	3696

# LCE拉太强导致的人脸contour

确定了root cause 是LCE output强度

将JPG 导入DP，查看当前JPG exif：

DIP\_X\_LCE\_LVIdx\_L  
DIP\_X\_LCE\_LVIdx\_H

7  
8

DIP\_X\_LCE\_DRIIdx\_L  
DIP\_X\_LCE\_DRIIdx\_H

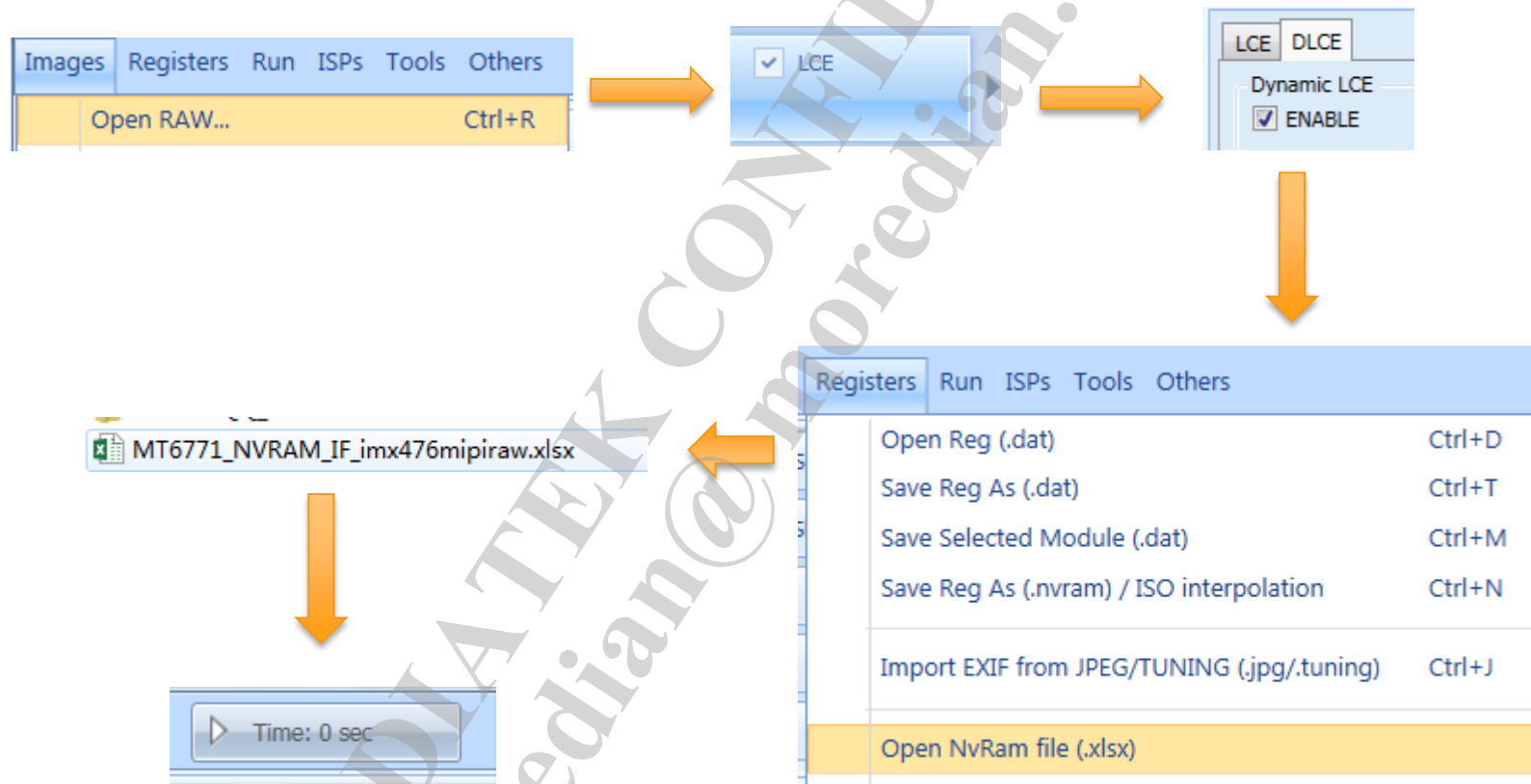
3  
4

进入imx\*\*\*mipiraw\_\*\*\*\_TONE.cpp,增大如下框中的Strength，simulation

```
length
LV7    LV8
, 1024, 1024,
, 818, 918,
, 802, 802,
, 400, 400,
, 400, 400,
```

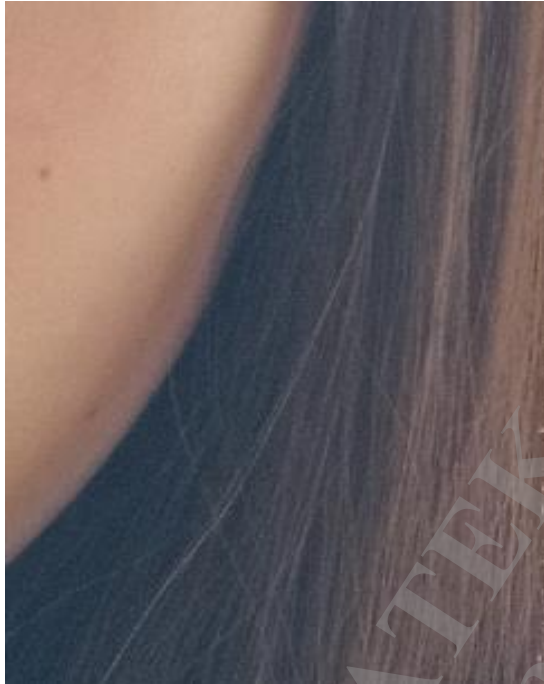
# LCE拉太强导致的人脸contour

Simulation方法：

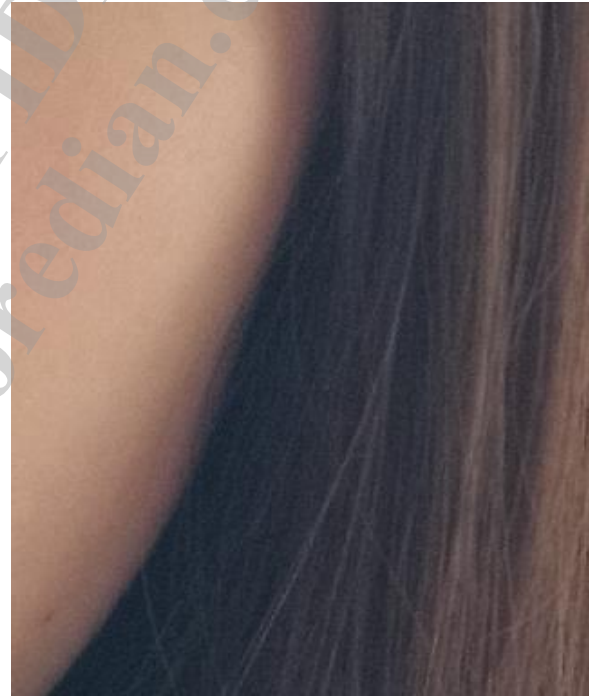


# LCE拉太强导致的人脸contour

Tuning前后对比：



Not ok



nice



# HDR4cell sensor preview

## ISO跑不到最大

现象：preview时，全黑状态，NG 和 OK ISO对比



# 4cell sensor preview ISO 跑不到最大

Root cause:

34606 03-02 12:21:09.469950 19868 20675 E ae\_mgr : getSensitivityDeltaIndex:10 512

34608 03-02 12:21:09.469972 19868 20675 E ae\_mgr : MinIndex(max BV) reach Preview limitation , need extend preview table

PREVIEW 和 capture 走的不同的 pline , preview 需要预留10index 给 capture 做参数转换 , 所以吃不到底

因為是 4cell preview, 所以preview感度會是capture的 2x , 所以 u4Cap2PreRatio是512 , 所以capture pline 一定要比preview pline长10index做转换 , 不然会被卡主

解法 :

1. 加长capture pline table , 比preview 多10index
2. 让HDR capture preview 走同一组pline , 也就是AETABLE\_SCENE\_INDEX19



# 手抖时拍照亮度异常



# 手抖时拍照亮度异常

**root cause** : FD 框未跟上 face motion, 造成FD框到背景, 影響AE人臉亮度的判定

由于功耗考量, FD框改为每2帧更新一次, 僅能透過相關的parameter tuning, 來讓FD框未每幀更新造成的亮度異常減到最低.

**解法** : AE 参数覆盖这种case

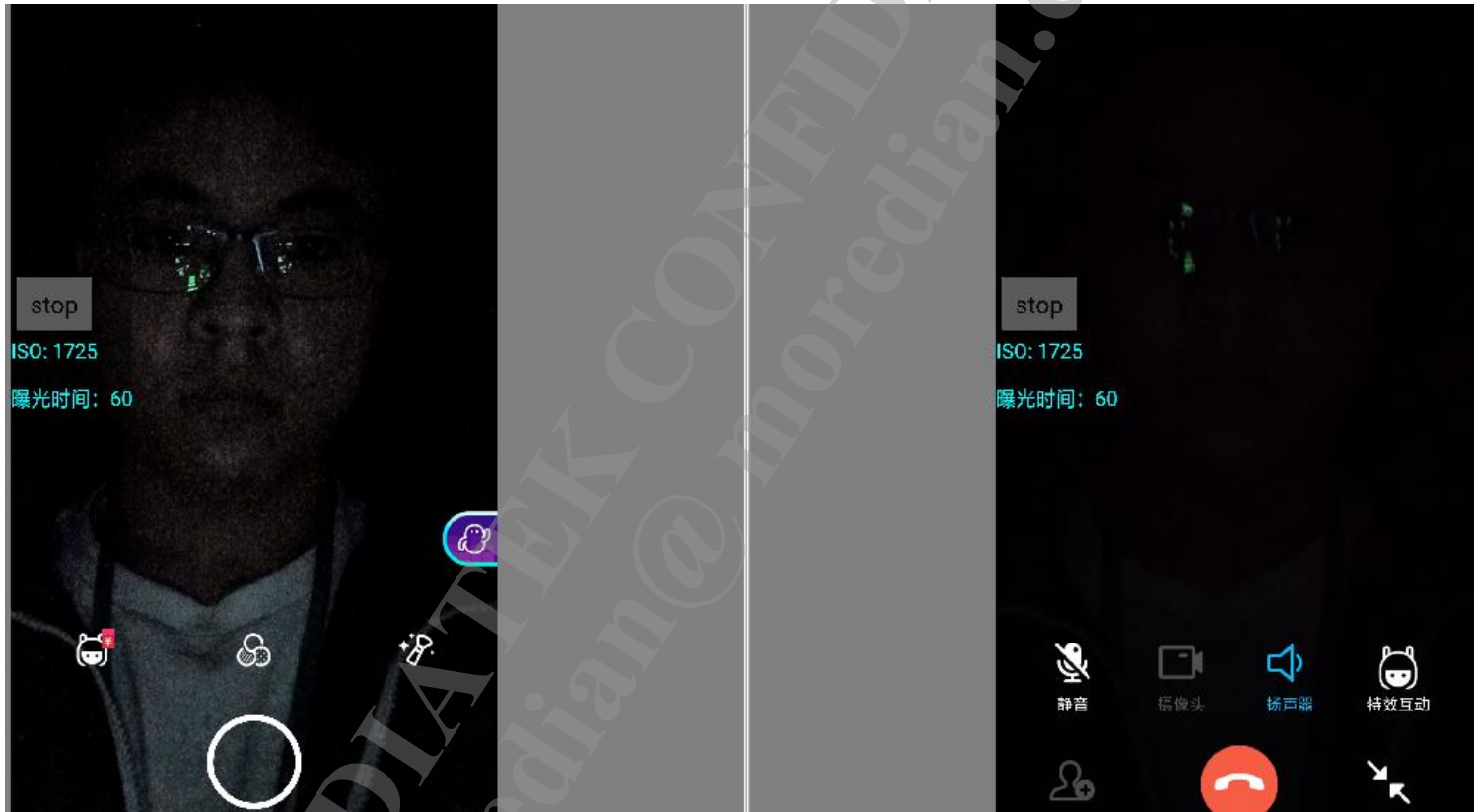
將 FaceMotionLockRat 的數值調低, 建議設為0

將 LimitStableThdLowBndNum 數值稍微調高, 建議設為1

將 InToOutThdMaxCnt 稍微調低, 建議設為2

將 FaceOutB2TStableThd 與 FaceOutD2TStableThd 皆調高,

# QQ视频通话最高ISO只能跑到1725



# QQ视频通话最高ISO只能跑到1725

Root cause :

```
462105 02-25 12:57:38.351298 28031 28075 E ae_mgr : [setAEMinMaxFrameRatePlnIdx:s]  
m_u4FinerEVIdxBase: 3 MaxFps/MaxIdx/MinIdx/Idx/MaxIdxF/MinIdxF/IdxF/Fps  
:300/151/0/134/453/0/402/300
```

```
462107 02-25 12:57:38.351315 28031 28075 E ae_mgr : [setAEMinMaxFrameRatePlnIdx:e]  
m_u4FinerEVIdxBase: 3  
MinFps/MaxIdx/MinIdx/Idx/MaxIdxF/MinIdxF/IdxF/SearchIdx/Searchfps:150/134/0/134/402/0/402/1  
35/142
```

通过log看到QQ视频通话有clamping min fps 到15 fps.  
所以AE max index被clamping 在134就停了

# QQ视频通话最高ISO只能跑到1725

实验验证：

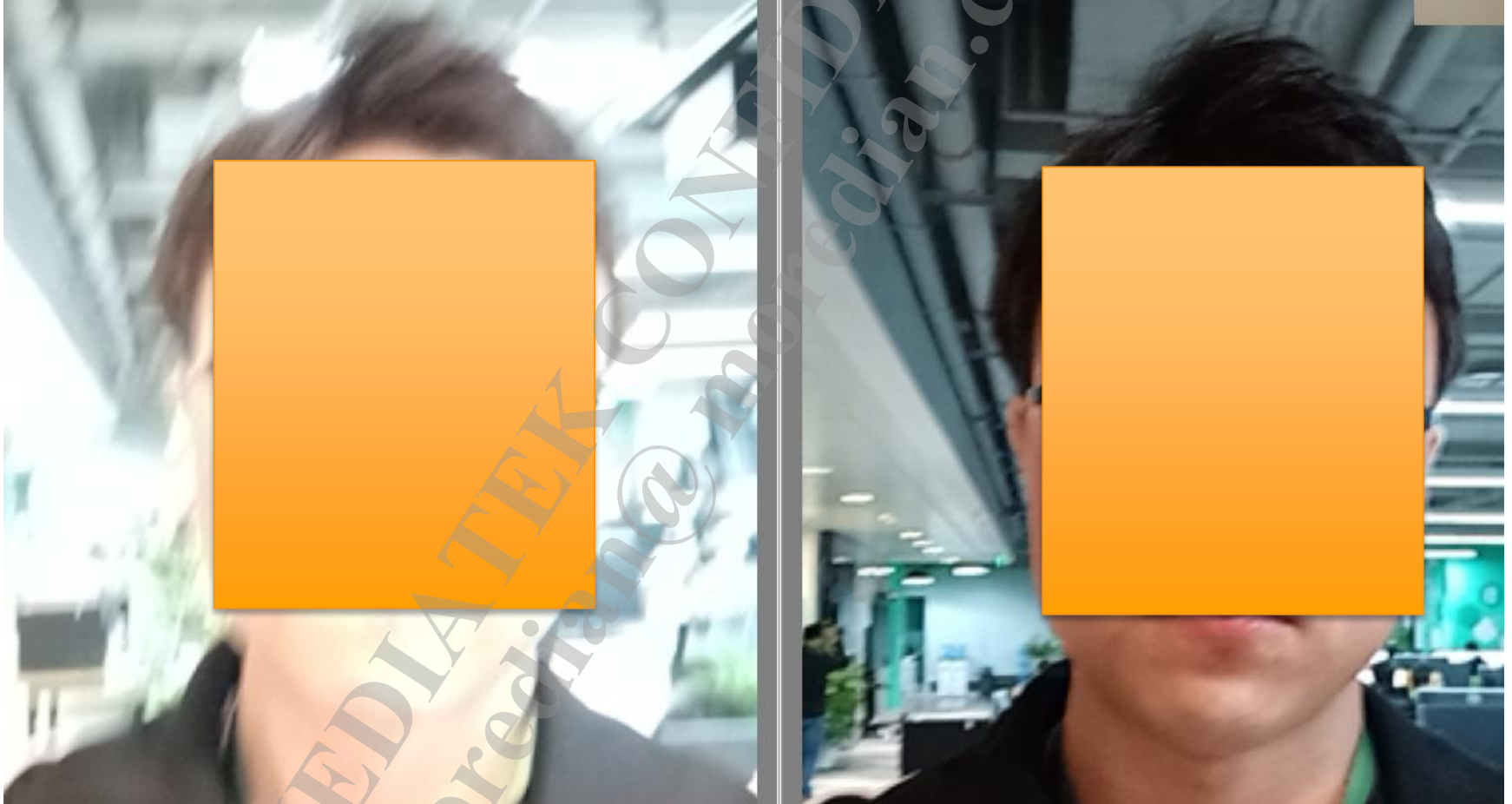
config.ftbl.imx476\_mipi\_raw.h 这一支文件按照如下修改 测试符合预期

FTABLE\_CONFIG\_AS\_TYPE\_OF\_USER：

```
ITEM_AS_USER_LIST_  
    //(15000,15000)",  
    //(20000,20000)",  
    //(24000,24000)",  
    "(10000,30000)",  
    //(15000,30000)",  
    //(30000,30000)",
```

**solution**：针对AP来，在MW层做特殊化处理。判断当前这个AP就把fps改一下

# QQ视频通话概率性过曝



# QQ视频通话概率性过曝

Root cause :

37208 02-27 21:51:54.615870 28131 31002 I CcuDrv : 788055276: setAEMeteringArea 0 XLow:66 XHi:66 YLow:47 YHi:48 Weight:1000

37478 02-27 21:51:54.618116 28131 31010 E ae\_mgr : [setAEMinMaxFrameRate] IsFrameRateLocked = 0 SensorMaxFPS = 300, i4NewMaxFPS/m\_i4AEMaxFps = 150/150

37480 02-27 21:51:54.618180 28131 31010 E ae\_mgr : [setAEMeteringArea():New] AE meter area ldx:0 Left:713 Right:733 Top:1022 Bottom:1060 Weight:1000

38444 02-27 21:51:54.637005 28131 30926 D AeAlgoCtrl: [checkTouchAE] a\_u4TouchCWR:4280, upper limit:188

38445 02-27 21:51:54.637005 28131 30926 D AeAlgoCtrl: **a\_u4TouchCWR=188**

38446 02-27 21:51:54.637018 28131 30926 D AeAlgoCtrl: [getRecommendCWTarget\_v2p0] Final AE Target 188, AvgY/CWY: 100/107, AOE/BL/HS/NS/MT/HSV4P0 47/47/47/51/51/83

Preview 时有下 touch 框，导致CWR达到188，所以会过曝

解法：by APP包名区分，請客戶mw那改成不能送框下來。



# 三方AE参数NVRAM index跑错

现象：

68209 02-23 15:16:06.954272 615 7528 D MtkCam/MappingMgr: [query] [Dev:2-Mod:LCE(29)] (Idx 7) (PF Preview, SM Preview, Bin 0, P2 1, FLASH 0, APP 3rd\_party, FD 1, ZOOM 0, LV 4, CT 6, ISO 2, CUSTOM 0)

68294 02-23 15:16:06.966437 615 7446 D MtkCam/MappingMgr: [query] [Dev:2-Mod:AE(23)] (Idx 1) (PF Preview, SM Preview, Bin 0, P2 0, FLASH 0, APP 3rd\_party, FD 0, ZOOM 1, LV 0, CT 0, ISO 0, CUSTOM 0)

68455 02-23 15:16:06.986945 615 7528 D MtkCam/MappingMgr: [query] [Dev:2-Mod:LCE(29)] (Idx 7) (PF Preview, SM Preview, Bin 0, P2 1, FLASH 0, APP 3rd\_party, FD 1, ZOOM 0, LV 4, CT 6, ISO 2, CUSTOM 0)

原預期要跑到下述3rd\_Preview\_xxx的Scenario, 但事實上跑的是Default\_Preview Scenario.

Capture Preview Video	Preview	No	RRZO_00	3rd_party												6	3rd_Capture_1080P	AE	3rd_Preview_1080P
Capture Preview Video	Preview	No	RRZO_01	3rd_party												6	3rd_Capture_1080P	AE	3rd_Preview_720P
Capture Preview Video	Preview	No	RRZO_02	3rd_party												6	3rd_Capture_1080P	AE	3rd_Preview_480P
	Preview															1	Face_Capture	AE	Default_Preview

# 三方AE参数NVRAM index跑错

原因：

P2 0, 代表P2Size是EP2Size\_IMGO, 但Excel中只有填寫RRZO\_00~02, 所以無法match.

至於為什麼只有AE如此, 因為P2Size本身就是P2才拿的到的東西, 3A是P1 module, 因此3A去query時P2Size並不存在, 只會是一個default value 0.

注：LCE属于ISP module，因此没有出现index跑错的问题

Capture Preview Video	Preview	No	RRZO_00	3rd_party													6	3rd_Capture_1080P	AE	3rd_Preview_1080P
Capture Preview Video	Preview	No	RRZO_01	3rd_party													6	3rd_Capture_1080P	AE	3rd_Preview_720P
Capture Preview Video	Preview	No	RRZO_02	3rd_party													6	3rd_Capture_1080P	AE	3rd_Preview_480P
	Preview																1	Face_Capture	AE	Default_Preview

# 三方AE参数NVRAM index跑错

解法：

新增IMGO於各有使用到P2Size的地方

Capture Preview Video	Preview	No	IMGO RRZO_00	3rd_pa rty													3rd_Capture_1080 P	AE	3rd_Preview_1080 P
																	6		
Capture Preview Video	Preview	No	IMGO RRZO_01	3rd_pa rty													3rd_Capture_1080 P	AE	3rd_Preview_720P
																	6		
Capture Preview Video	Preview	No	IMGO RRZO_02	3rd_pa rty													3rd_Capture_1080 P	AE	3rd_Preview_480P
																	6		
	Preview																Face_Capture	AE	Default_Preview
																	1		

# touch 黑色区域再次侦测人脸过曝

现象：touch 暗区，移动开手机，再次侦测到人脸，画面过曝



# touch 黑色区域再次侦测人脸过曝

Root cause :

第一次拍照过曝（有touch框）：

02-03 15:34:23.104038 21382 21604 E ae\_mgr : [setAEMeteringArea():Modified] AE meter area Idx:0 Left:-997 Right:-622 Top:257 Bottom:756 Weight:1

02-03 15:34:23.288936 21382 21486 D AeFlowDefault: [monitorAndReschedule:Perframe AE] Calc:1 Apply:1 Magic:150  
AEMonitorStable:0 VdCnt:0 u4CwvYcur:147 u4CwvYpre:83

02-03 15:34:27.967518 21382 21486 D AeFlowDefault: [monitorAndReschedule:Perframe AE] Calc:1 Apply:1 Magic:251  
AEMonitorStable:0 VdCnt:0 u4CwvYcur:178 u4CwvYpre:83

02-03 15:34:27.975818 21382 21407 I mtkcam-dev1: 1[CameraDevice1Base::takePicture] +

02-03 15:34:27.983954 21382 21407 D MtkCam/DefaultAdapter: (21407)(1)(MtkZsd)[takePicture] -

02-03 15:34:28.020519 21382 21486 D AeFlowDefault: [monitorAndReschedule:Perframe AE] Calc:1 Apply:1 Magic:252  
AEMonitorStable:0 VdCnt:0 u4CwvYcur:179 u4CwvYpre:83

第二次拍照正常（无touch框）：

02-03 15:34:31.807022 21382 21486 D AeFlowDefault: [monitorAndReschedule:Perframe AE] Calc:1 Apply:1 Magic:334  
AEMonitorStable:0 VdCnt:0 u4CwvYcur:157 u4CwvYpre:165

02-03 15:34:31.808345 21382 21615 D MtkCam/DefaultAdapter: (21615)(1)(MtkZsd)[takePicture] +

02-03 15:34:31.813642 21382 21615 D MtkCam/DefaultAdapter: (21615)(1)(MtkZsd)[takePicture] -

02-03 15:34:31.857640 21382 21486 D AeFlowDefault: [monitorAndReschedule:Perframe AE] Calc:1 Apply:1 Magic:335  
AEMonitorStable:0 VdCnt:0 u4CwvYcur:159 u4CwvYpre:165

# touch 黑色区域再次侦测人脸过曝

Root cause :

第三次拍照过曝（有touch框）：

02-03 15:34:37.438418 21382 21604 E ae\_mgr : [setAEMeteringArea():Modified] AE meter area Idx:0 Left:-916 Right:-542 Top:-756 Bottom:-257 Weight:1

02-03 15:34:37.442048 21382 21486 D AeFlowDefault: [monitorAndReschedule()] Calc:1 Apply:1 Cnt:0 Frame:0 Magic:458 ReSchedule:1 Exit:0 Skip:0 bStatChange:0 AEMonitorStable:1 VdCnt:0 FaceArea:0 FaceWOCnt:17 TouchArea:1 u4CwvYcur:84 u4CwvYpre:84

02-03 15:34:37.480658 21382 21486 D AeFlowDefault: [monitorAndReschedule:Perframe AE] Calc:1 Apply:1 Magic:459 AEMonitorStable:1 VdCnt:1 u4CwvYcur:84 u4CwvYpre:84

02-03 15:34:42.029585 21382 21486 D AeFlowDefault: [monitorAndReschedule:Perframe AE] Calc:1 Apply:1 Magic:558 AEMonitorStable:0 VdCnt:0 u4CwvYcur:177 u4CwvYpre:84

02-03 15:34:42.058668 21382 21615 I mtkcam-dev1: 1[CameraDevice1Base::takePicture] +

02-03 15:34:42.066076 21382 21615 D MtkCam/DefaultAdapter: (21615)(1)(MtkZsd)[takePicture] -

02-03 15:34:42.077464 21382 21486 D AeFlowDefault: [monitorAndReschedule:Perframe AE] Calc:1 Apply:1 Magic:559 AEMonitorStable:0 VdCnt:0 u4CwvYcur:177 u4CwvYpre:84

touchAE和FaceAE，如果有touch的話，會以touch為主

那touch什麼時候會break，是"touch stable後，畫面的亮度變化夠大“

這題因為touch後，很快就把畫面拉到天花板, touch都還沒stable，所以還是留在touch，所以不會脫離touch，變到faceAE

# touch 黑色区域再次侦测人脸过曝

## solution :

A\_MGR针对这种case作如下修改：

```
//First time with face to without face
if (m_eAEFDArea.u4Count &&(pFaces->number_of_faces == 0)){
    m_bFaceAEAreaChage = MTRUE;
    m_u4WOFDcnt = 0 ;
    AE_LOG( "[%s()] First frame without face Count %d ->%d \n",
__FUNCTION__,m_eAEFDArea.u4Count,pFaces->number_of_faces);
}else if( (m_eAEFDArea.u4Count==0) && (pFaces->number_of_faces !=
0) ){ //First time without face to with face
    memset(&m_eAEMeterArea,0,sizeof(AEMeteringArea_T));
    m_eAEMeterArea.u4Count =1;
    m_plAeAlgo->setAEMeteringArea(&m_eAEMeterArea);
    m_bTouchAEAreaChage = MFALSE;
    m_bAFTouchROISet = MFALSE;
    AE_LOG( "[setFDInfo] Clear Metering Area\n");
}
```



# 同一场景连续拍照，AE LCElink概率性失败导致的亮度不一致

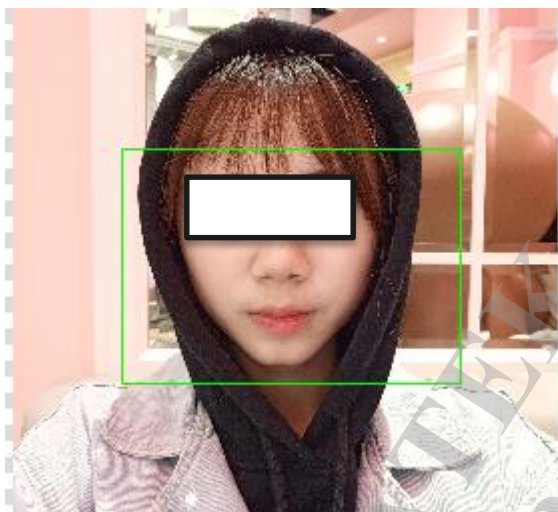
现象：海岸城商场内，同一个场景连续拍照，概率性亮度不一致



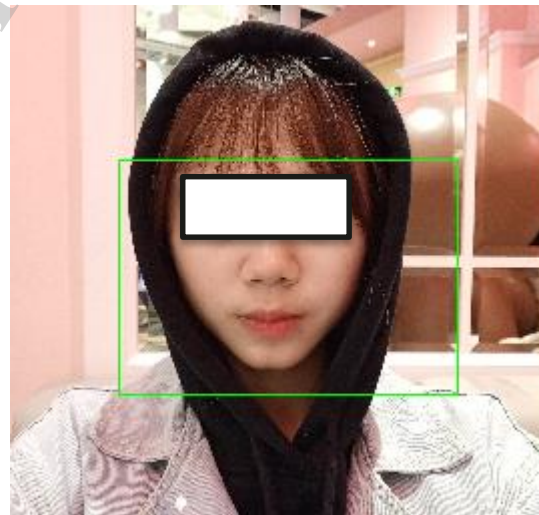
# 同一场景连续拍照，亮度不一致

Root cause :

先看AE是否一致，通过FastStone Image Viewer check exif看到，EXP 和 ISO都是一样的，将JPG导入DP，check AE 信息也是一样



AE_TAG_PRV_INDEX	112
AE_TAG_PRV_INDEXF	338
AE_TAG_PRV_SHUTTER_TIME	39998
AE_TAG_PRV_SENSOR_GAIN	5969

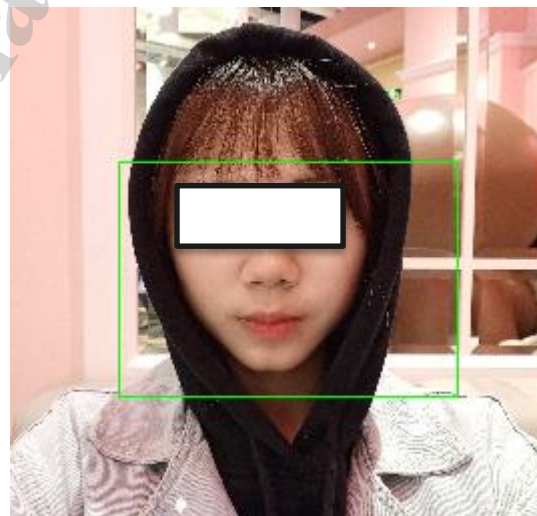
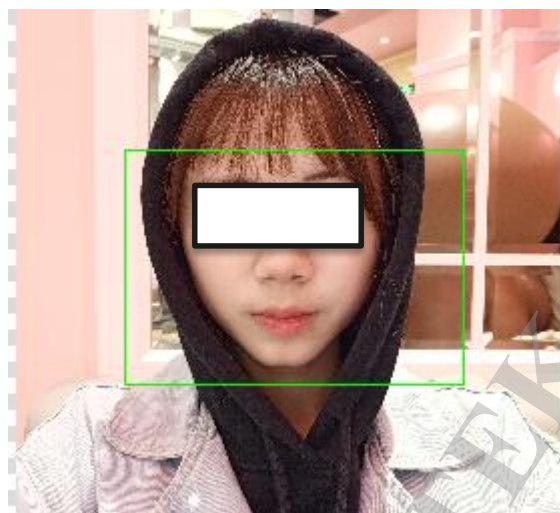


AE_TAG_AE_MODE	1
AE_TAG_PRV_INDEX	112
AE_TAG_PRV_INDEXF	338
AE_TAG_PRV_SHUTTER_TIME	39998
AE_TAG_PRV_SENSOR_GAIN	5888

# 同一场景连续拍照，亮度不一致

Root cause :

再check LCE,发现偏暗的那张FACE LCE没有作用



-----  
DIP\_X\_LCE\_FDY  
DIP\_X\_LCE\_MeterFDTarget  
DIP\_X\_LCE\_FDProb  
DIP\_X\_LCE\_AEGain

60  
74  
1024  
93

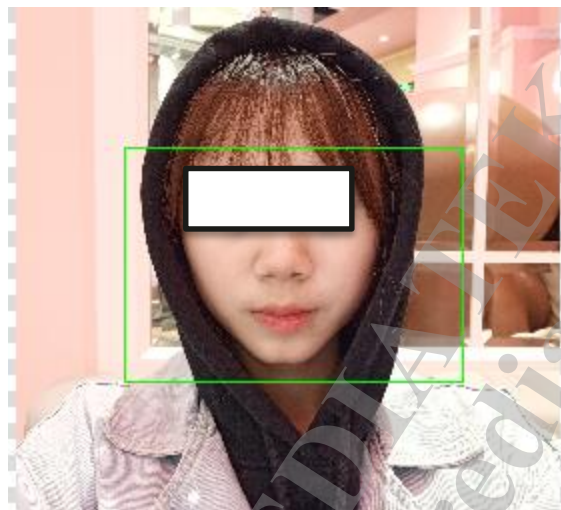
DIP\_X\_LCE\_FDY  
DIP\_X\_LCE\_MeterFDTarget  
DIP\_X\_LCE\_FDProb  
DIP\_X\_LCE\_AEGain

63  
0  
1024  
0

# 同一场景连续拍照，亮度不一致

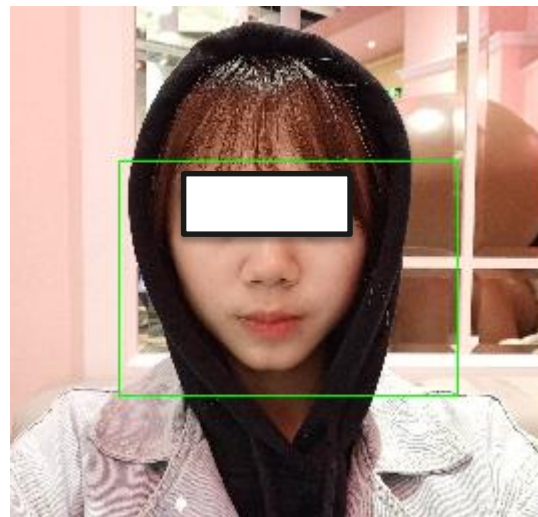
Root cause :

再AE LCE link,发现偏暗的那张link 失败，参数无法优化，转给LCE flow 的，需要flow检查为何 概率性link失败



AE\_TAG\_FACE\_20\_LCE\_LINK

1



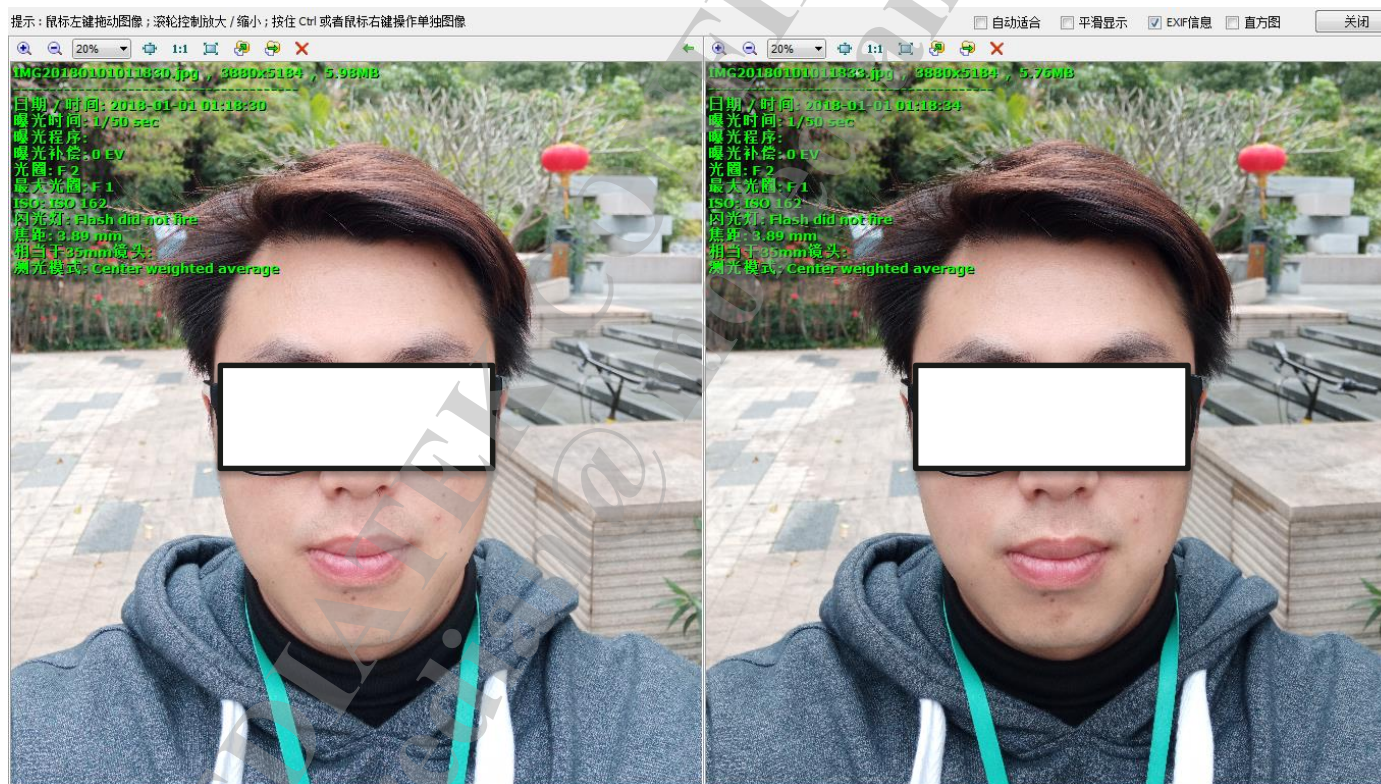
AE\_TAG\_FACE\_20\_LCE\_LINK

0



# 同一场景连续拍照，FDY概率性不一致导致的亮度不一致

现象：同一个场景连续拍照，概率性亮度不一致



# 同一场景连续拍照，FDY概率性不一致导致的亮度不一致

Root cause :

Check AE一致后，看LCE，可以看到两张照片face LCE 的 gain不一样，所以拉的强度不一样，所以最终的亮度不一致



DIP_X_LCE_FDY	40
DIP_X_LCE_MeterFDTTarget	75
DIP_X_LCE_FDProb	1024
DIP_X_LCE_AEGain	244



DIP_X_LCE_FDY	68
DIP_X_LCE_MeterFDTTarget	75
DIP_X_LCE_FDProb	1024
DIP_X_LCE_AEGain	43

# 同一场景连续拍照，FDY概率性不一致导致的亮度不一致

Root cause :

为什么face LCE作用强度不差这么多呢？原来两张target一样，但是LCE拿到的FDY差异很大，导致face lce gain差异很大



DIP_X_LCE_FDY	40
DIP_X_LCE_MeterFDTarget	75
DIP_X_LCE_FDProb	1024
DIP_X_LCE_AEGain	244



DIP_X_LCE_FDY	68
DIP_X_LCE_MeterFDTarget	75
DIP_X_LCE_FDProb	1024
DIP_X_LCE_AEGain	43



# 同一场景连续拍照，FDY概率性不一致导致的亮度不一致

Root cause : check AE 统计到的FDY 两张都是40，但是偏暗的那张JPG LCE拿到的FDY 却和 AE送出的不一样！！！！



DIP_X_LCE_FDY	40
DIP_X_LCE_MeterFDTTarget	75
DIP_X_LCE_FDProb	1024
DIP_X_LCE_AEGain	244
AE_TAG_FACE_20_MULTI_FDY_0	40



DIP_X_LCE_FDY	68
DIP_X_LCE_MeterFDTTarget	75
DIP_X_LCE_FDProb	1024
DIP_X_LCE_AEGain	43
AE_TAG_FACE_20_MULTI_FDY_0	40

# 同一场景连续拍照，FDY概率性不一致导致的亮度不一致

Root cause : check AE 统计到的FDY 两张都是40，但是偏暗的那张JPG LCE拿到的FDY 却和 AE送出的不一样！！！！



DIP_X_LCE_FDY	40
DIP_X_LCE_MeterFDTarget	75
DIP_X_LCE_FDProb	1024
DIP_X_LCE_AEGain	244
AE_TAG_FACE_20_MULTI_FDY_0	40



DIP_X_LCE_FDY	68
DIP_X_LCE_MeterFDTarget	75
DIP_X_LCE_FDProb	1024
DIP_X_LCE_AEGain	43
AE_TAG_FACE_20_MULTI_FDY_0	40

# 同一场景连续拍照，FDY概率性不一致导致的亮度不一致

solution :

750991 01-01 20:56:58.564309 610 5659 D AeAlgo : Face=0, FaceNum=1, m\_u4FDY=43, FaceId=1, i4Type=0, ROP=0, XLow=39, XHi=91, YLow=24, YHi=59, FaceWidth=52, FaceHeight=35, FaceMotionX=0, FaceMotionY=0, ScaleFD=39, 83, 24, 58

m\_u4BacklightCWM/m\_u4AntiOverExpCWM/m\_u4HistoStretchCWM/m\_u4FDY/m\_u4MeterY/m\_u4CWRRecommend/m\_u4CWValue/m\_u4AvgWValue/i4DeltaIndex/m\_u4IndexF 047 047 047 043 000 122 122 146 000 274

753471 01-01 20:56:58.614354 610 5871 D MtkCam/DefaultAdapter: (5871)(1)(MtkZsd)[takePicture] -

758962 01-01 20:56:58.884262 610 5659 D AeAlgo : calFDY\_v4p0 Frontal Face

758966 01-01 20:56:58.884455 610 5659 D AeAlgo : Face=0, FaceNum=1, m\_u4FDY=23, FaceId=1, i4Type=0, ROP=0, XLow=39, XHi=91, YLow=24, YHi=59, FaceWidth=52, FaceHeight=35, FaceMotionX=0, FaceMotionY=0, ScaleFD=39, 83, 24, 58

764048 01-01 20:56:59.068978 610 5773 D Ice\_core: ori u4AEGain:3384, FDY:23, FDT:76

764802 01-01 20:56:59.090760 610 5659 D AeAlgo : Face=0, FaceNum=1, m\_u4FDY=44, FaceId=1, i4Type=0, ROP=0, XLow=39, XHi=91, YLow=24, YHi=59, FaceWidth=52, FaceHeight=35, FaceMotionX=0, FaceMotionY=0, ScaleFD=39, 83, 24, 58

AE在拍拍照前Preview存入，LCE拿拍照事件後切完Sensor mode後的統計值，兩邊不sync，flow 修改cover

**MEDIATEK**

*everyday genius*