PEGATRON Navigate the future

Thorpe

Status - ARCore 90-Degree Image Rotation Bug

MEMBER
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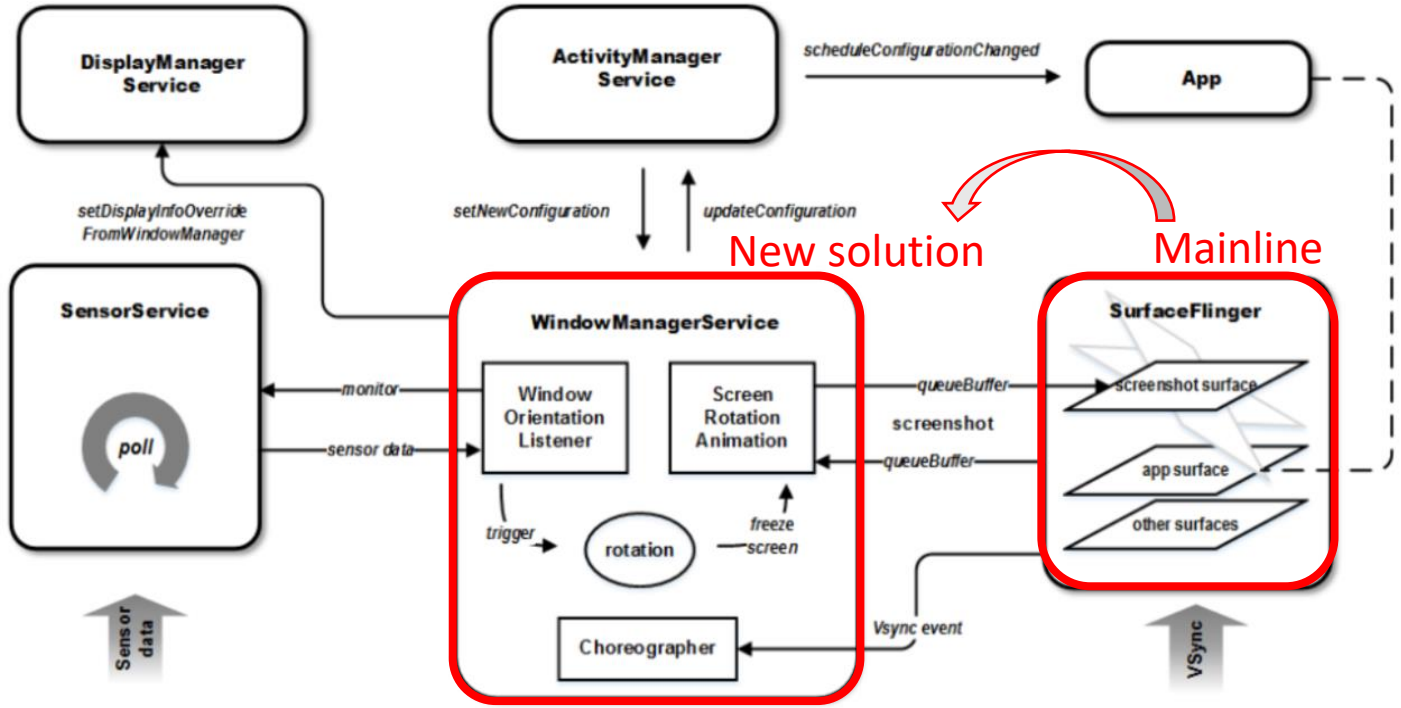
Background

					Android Launcher	Sanpdragon Camera			ARCore CamCal	
Case	android.lens.poseRotation (x,y,x,w)	device tree camera sensor yaw/picth/roll (android.sensor.orientation)	DisplayRotation.java	ro.surface_flinger.primary_display_orientation	UI	UI	Stream	Still Image	UI	Stream
1	[0,0,0,1]		ROTATION_0	ORIENTATION_0 (IDP)	Portrait	Portrait	Portrait	Landscape	Landscape	Landscape
2	[0,0,0,1]	roll= 0, pitch=0, yaw=180	ROTATION_0	**ORIENTATION_90(Thorpe)**	Landscape	Landscape	Landscape	Landscape	Landscape	Portrait
3	[0,0,0,1]	roll= 0, pitch=0, yaw=180	ROTATION_0	ORIENTATION_90	Landscape	Landscape	Landscape	Landscape	Landscape	Portrait
4	[0,0,0,1]	roll= 90, pitch=0, yaw=180	ROTATION_0	ORIENTATION_90	Landscape	Landscape	Portrait	Portrait	Landscape	Portrait
5	[0,0,0,1]	roll= 0, pitch=90, yaw=180	ROTATION_0	ORIENTATION_90	Landscape	Landscape	Landscape	Landscape	Landscape	APP fail
6	[0,0,0,1]	roll= 0, pitch=0, yaw=270	ROTATION_0	ORIENTATION_90	Landscape	Landscape	Landscape	Landscape	Landscape	APP fail
7	[0,0,0,1]	roll= 0, pitch=90, yaw=270	ROTATION_0	ORIENTATION_90	Landscape	Landscape	Landscape	Landscape	Landscape	APP fail
8	[0,0,0,1]	roll= 0, pitch=0, yaw=180	ROTATION_0	ORIENTATION_0	Landscape	Landscape	Portrait	Landscape	Landscape	Landscape
9	[0,0,0.707,0.707]	roll= 0, pitch=0, yaw=180	ROTATION_0	ORIENTATION_90	Landscape	Landscape	Landscape	Landscape	Landscape	Portrait
10	[0,0,0,1]	roll= 90, pitch=0, yaw=180	ROTATION_90	ORIENTATION_0	Landscape	Portrait	Landscape	Landscape	Landscape	Landscape



Mainline: Original Baseline

- ro.surface_flinger.primary_display_orientation=ORIENTATION_90
    - The SurfaceFlinger defined the internal display's natural orientation as 90°
- AR core camera calibration fail (90 degree)

Status	Description
Mainline	Original setup using system property ro.surface_flinger.primary_display_orientation=ORIENTATION_90
Solution	1. Set ro.surface_flinger.primary_display_orientation=ORIENTATION_0 2. adjust sensor, touch, and camera XY orientation to align with portrait as the natural orientation 3. Add +90° offset on top of Phase 2 with animation and framework-level configuration 3.1 Change window Manager Service • Change wm/DisplayRotation.java code • Set NATURAL_ROTATION (default coordinate system) as Surface.ROTATION_90 • Set "def_user_rotation" as 1 3.2 Change setup wizard direction 3.3 Change launcher direction 3.4 Change Boot Animation

#1 Set ro.surface_flinger.primary_display_orientation=ORIENTATION_0

- Reverted system property:
  - ro.surface_flinger.primary_display_orientation (removed)

```
diff --git a/tools/buildinfo_odm.sh b/tools/buildinfo_odm.sh
index f26f45b95b..6edd1f69b4 100755
--- a/tools/buildinfo_odm.sh
+++ b/tools/buildinfo_odm.sh
@@ -22,7 +22,6 @@ echo "ro.product.vendor.name=$BUILD_PRODUCT"
 echo "ro.vendor.build.fingerprint=Trimble/$BUILD_PRODUCT/$BUILD_DEVICE:$PLATFORM_VERSION/$BUILD_ID/$BF_BUILD_NUMBER:$TARGET_BUILD_VARI
ANT/$BUILD_VERSION_TAGS"
 echo "ro.bootimage.build.fingerprint=Trimble/$BUILD_PRODUCT/$BUILD_DEVICE:$PLATFORM_VERSION/$BUILD_ID/$BF_BUILD_NUMBER:$TARGET_BUILD_V
ARIANT/$BUILD_VERSION_TAGS"

-echo "ro.surface_flinger.primary_display_orientation=ORIENTATION_90"
 echo "qemu.hw.mainkeys=1"
 echo "vendor.display.enable_display_extensions=1"
 echo "# end odm build properties"
```

#2 adjust sensor, touch, and camera XY orientation to align with portrait as the natural orientation

- Purpose:
  - Sensor HAL: Swap X/Y axes to treat portrait as the natural reference
  - Touch Input: Coordinate remap (X↔Y)
  - Camera HAL: Ensure sensorOrientation and displayRotation match the logical portrait mode

- Result:
  - System and hardware behave consistently as if portrait = ROTATION_0

Path: /LINUX/android/build/make

#2 adjust sensor, touch, and camera XY orientation to align with portrait as the natural orientation

- (2-1) Adjusted the following:
  - Sensor HAL: Swap X/Y axes to treat portrait as the natural reference

```
--- a/sensors-see/registry/config/lahaina/kodiak_idp_lsm6dst_0.json
+++ b/sensors-see/registry/config/lahaina/kodiak_idp_lsm6dst_0.json
@@ -7,13 +7,13 @@
     "owner": "lsm6dst",
     ".orient":{
       "owner": "lsm6dst",
-      "x":{ "type": "str", "ver": "0",
-        "data": "+x"
-      },
-      "y":{ "type": "str", "ver": "0",
+      "x":{ "type": "str", "ver": "1",
         "data": "-y"
       },
-      "z":{ "type": "str", "ver": "0",
+      "y":{ "type": "str", "ver": "1",
+        "data": "-x"
+      },
+      "z":{ "type": "str", "ver": "1",
         "data": "-z"
       }
     }
```

#2 adjust sensor, touch, and camera XY orientation to align with portrait as the natural orientation

- (2-2) Adjusted the following:
  - Touch Input: Coordinate remap (X↔Y)

```
diff --git a/drivers/input/touchscreen/egalax_i2c.c b/drivers/input/touchscreen/egalax_i2c.c
index dc217a706..51f275672 100644
--- a/drivers/input/touchscreen/egalax_i2c.c
+++ b/drivers/input/touchscreen/egalax_i2c.c
@@ -65,9 +65,9 @@
 #endif

 // Global define to enable function
-//#define _SWITCH_XY
+#define _SWITCH_XY
 //#define _CONVERT_Y
-//#define _CONVERT_X
+#define _CONVERT_X

 #define MAX_EVENTS              600
 #define MAX_I2C_LEN             64
```

#2 adjust sensor, touch, and camera XY orientation to align with portrait as the natural orientation

- (2-3) Adjusted the following:
  - Camera HAL

```
--- a/camera-devicetree/yupik-camera-sensor-idp.dtsi
+++ b/camera-devicetree/yupik-camera-sensor-idp.dtsi
@@ -319,7 +319,7 @@
                cell-index = <7>;
                compatible = "qcom,cam-sensor";
                csiphy-sd-index = <0>;
-               sensor-position-roll = <0>;
+               sensor-position-roll = <90>;
                sensor-position-pitch = <0>;
                sensor-position-yaw = <180>;
                actuator-src = <&actuator_rear>;
```

#3 Add +90° offset

- 3.1 Change window Manager Service
  - **A. RotationPolicy.java**

```
diff --git a/core/java/com/android/internal/view/RotationPolicy.java b/core/java/com/android/internal/view/RotationPolicy.java
index 6e45796df053..f987df3f6dca 100644
--- a/core/java/com/android/internal/view/RotationPolicy.java
+++ b/core/java/com/android/internal/view/RotationPolicy.java
@@ -41,7 +41,7 @@ public final class RotationPolicy {
     private static final String TAG = "RotationPolicy";
     private static final int CURRENT_ROTATION = -1;

-    public static final int NATURAL_ROTATION = Surface.ROTATION_0;
+    public static final int NATURAL_ROTATION = Surface.ROTATION_90;

     private RotationPolicy() {
     }
@@ -209,4 +209,4 @@ public final class RotationPolicy {

         public abstract void onChange();
     }
-}
\ No newline at end of file
+}
```

3. Add +90° offset

- 3.1 Change window Manager Service
  - **B. SettingsProvider defaults.xml**

Path: /QCM6490_apps_qssi15/LINUX/android/frameworks/base

```
diff --git a/packages/SettingsProvider/res/values/defaults.xml b/packages/SettingsProvider/res/values/defaults.xml
index 801d6764d4df..605ee29ba4df 100644
--- a/packages/SettingsProvider/res/values/defaults.xml
+++ b/packages/SettingsProvider/res/values/defaults.xml
@@ -123,7 +123,7 @@
     <bool name="def_accessibility_display_magnification_auto_update">true</bool>

     <!-- Default for Settings.System.USER_ROTATION -->
-    <integer name="def_user_rotation">0</integer>
+    <integer name="def_user_rotation">1</integer>

     <!-- Default for Settings.Secure.DOWNLOAD_MAX_BYTES_OVER_MOBILE. <=0 if no limit -->
     <integer name="def_download_manager_max_bytes_over_mobile">-1</integer>
```

- Result:

```
D:\work_exe\20231212_adb\platform-tools_r34.0.5-windows\platform-tools>adb shell settings get system user_rotation
1
```

3. Add +90° offset

- 3.1 Change window Manager Service
  - **C. DisplayRotation.java**

```
--- a/services/core/java/com/android/server/wm/DisplayRotation.java
+++ b/services/core/java/com/android/server/wm/DisplayRotation.java
@@ -20,6 +20,7 @@ import static android.app.WindowConfiguration.WINDOWING_MODE_FULLSCREEN;
 import static android.content.pm.ActivityInfo.SCREEN_ORIENTATION_UNSET;
 import static android.content.pm.ActivityInfo.SCREEN_ORIENTATION_UNSPECIFIED;
 import static android.view.Display.TYPE_EXTERNAL;
+import static android.view.Display.TYPE_INTERNAL;
 import static android.view.Display.TYPE_OVERLAY;
 import static android.view.Display.TYPE_VIRTUAL;
 import static android.view.WindowManager.LayoutParams.ROTATION_ANIMATION_CROSSFADE;
@@ -171,7 +172,7 @@ public class DisplayRotation {
      * @see #updateRotationUnchecked
      */
     @Surface.Rotation
-    private int mRotation;
+    private int mRotation=1;

     @VisibleForTesting
     int mLandscapeRotation;  // default landscape
@@ -447,6 +448,13 @@ public class DisplayRotation {
         } else if (syspropValue.equals("ORIENTATION_270")) {
             return Surface.ROTATION_270;
         }
+
+        // Customer offset: add +90° for internal default panel only
+        if(displayContent.isDefaultDisplay && (displayContent.mDisplay.getType() == TYPE_INTERNAL))
+        {
+                return Surface.ROTATION_90;
+        }

@@ -1521,7 +1529,7 @@ public class DisplayRotation {
                 if (preferredRotation >= 0) {
                     return preferredRotation;
                 }
-                return Surface.ROTATION_0;
+                return Surface.ROTATION_90;
             }
         }
     }
```

3. Add +90° offset

- 3.2 Change setup wizard direction
  - Default launcher orientation: **Landscape**

```
diff --git a/products/gms.mk b/products/gms.mk
index 05679c0..b3eaae8 100644
--- a/products/gms.mk
+++ b/products/gms.mk
@@ -101,7 +101,7 @@ PRODUCT_PACKAGES += \
 include $(ANDROID_PARTNER_GMS_HOME)/products/gms_package_version.mk

 PRODUCT_PRODUCT_PROPERTIES += \
-    ro.setupwizard.rotation_locked=true \
+    ro.setupwizard.rotation_locked=false \
     setupwizard.theme=glif_v3_light \
     ro.opa.eligible_device=true \
     ro.com.google.gmsversion=$(GMS_PACKAGE_VERSION_ID)
```

Path: /QCM6490_apps_qssi15/LINUX/android/vendor/partner_gms

ro.setupwizard.rotation_locked=true

ro.setupwizard.rotation_locked=false

3. Add +90° offset

- 3.3 Change launcher direction
  - Default launcher orientation: **Landscape**
  - Behavior:
    - **Home rotation OFF**: Always landscape
    - **Home rotation ON**: Follows sensor

```
diff --git a/src/com/android/launcher3/states/RotationHelper.java b/src/com/android/launcher3/states/RotationHelper.java
index fdb37f0..1e1c5e1 100644
--- a/src/com/android/launcher3/states/RotationHelper.java
+++ b/src/com/android/launcher3/states/RotationHelper.java
@@ -18,6 +18,7 @@ package com.android.launcher3.states;
 import static android.content.pm.ActivityInfo.SCREEN_ORIENTATION_LOCKED;
 import static android.content.pm.ActivityInfo.SCREEN_ORIENTATION_NOSENSOR;
 import static android.content.pm.ActivityInfo.SCREEN_ORIENTATION_UNSPECIFIED;
+import static android.content.pm.ActivityInfo.SCREEN_ORIENTATION_LANDSCAPE;
 import static android.util.DisplayMetrics.DENSITY_DEVICE_STABLE;

 import static com.android.launcher3.LauncherPrefs.ALLOW_ROTATION;
@@ -209,7 +210,7 @@ public class RotationHelper implements OnSharedPreferenceChangeListener,
         } else {
             // If auto rotation is off, allow rotation on the activity, in case the user is using
             // forced rotation.
-            activityFlags = SCREEN_ORIENTATION_NOSENSOR;
+            activityFlags = SCREEN_ORIENTATION_LANDSCAPE;
         }
         if (activityFlags != mLastActivityFlags) {
             mLastActivityFlags = activityFlags;
```

3. Add +90° offset

- 3.4 Change Boot Animation
  - Ensures smooth user experience on screen rotation events

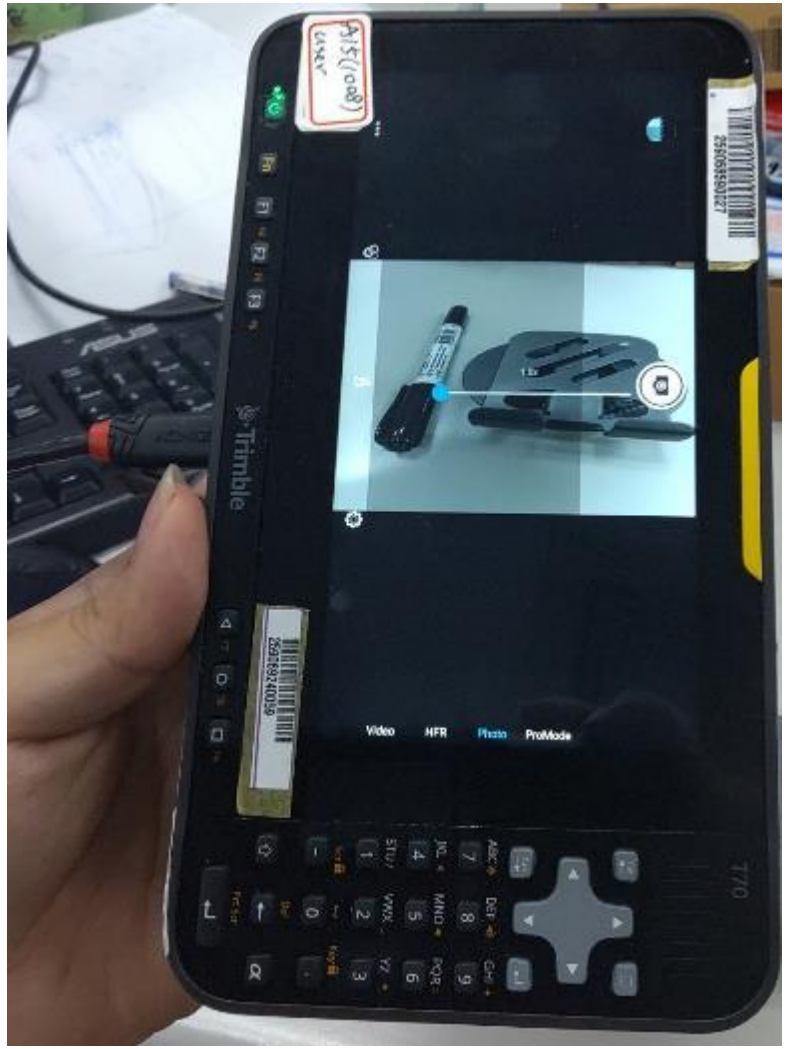
```
diff --git a/cmds/bootanimation/BootAnimation.cpp b/cmds/bootanimation/BootAnimation.cpp
index 98d5860a07a5..6b566bf7be36 100644
--- a/cmds/bootanimation/BootAnimation.cpp
+++ b/cmds/bootanimation/BootAnimation.cpp
@@ -571,16 +571,22 @@ status_t BootAnimation::readyToRun() {
         return error;
     }

+    SurfaceComposerClient::Transaction t;
     mMaxWidth = android::base::GetIntProperty("ro.surface_flinger.max_graphics_width", 0);
     mMaxHeight = android::base::GetIntProperty("ro.surface_flinger.max_graphics_height", 0);
     ui::Size resolution = displayMode.resolution;
     resolution = limitSurfaceSize(resolution.width, resolution.height);
+    int d_width = resolution.getWidth(), d_height = resolution.getHeight();
+    d_width = resolution.getHeight();
+    d_height = resolution.getWidth();
+    Rect destRect(d_width, d_height);
+    t.setDisplayProjection(mDisplayToken, ui::ROTATION_90, destRect, destRect);
+    ALOGD("BootAnimation default set rotation to be 90");
     // create the native surface
     sp<SurfaceControl> control = session()->createSurface(String8("BootAnimation"),
-            resolution.getWidth(), resolution.getHeight(), PIXEL_FORMAT_RGB_565,
+            d_width, d_height, PIXEL_FORMAT_RGB_565,
             ISurfaceComposerClient::eOpaque);

-    SurfaceComposerClient::Transaction t;
     if (isValid) {
         // In the case of multi-display, boot animation shows on the specified displays
         for (const auto id : physicalDisplayIds) {
```

#3 Validation Checklist – (v20251107)

Category	Validation Step	Expected Result	
Boot	Power on SetupWizard	Default 90° offset portrait behavior shown	PASS
Home Screen	Auto Rotation OFF	Fixed landscape	PASS
	Auto Rotation ON	Follows sensor	PASS
Touch Input	function test	Matches point	PASS
Camera	Auto Rotation OFF	UI	PASS
		Streaming	PASS
		Still Image	PASS
	Auto Rotation ON	UI	FAIL
		Streaming	FAIL
		Still Image	FAIL
External Display	HDMI/Virtual Display	Show original view	PASS
Boot Animation	App rotation	Default 90° offset portrait behavior shown	PASS

#3 Validation Checklist – (v20251107)

- Camera UI, Streaming and Still image abnormal when Auto Rotation is ON



#3 Validation Checklist – (v20251112)

		202511120447_thorpe_dev_arcore	
Test Case	Description	Result	Comment
Boot Animation		Pass	
Setup Wizard orientation	Power on SetupWizard	Pass	
Home Screen	Auto Rotation OFF	Pass	
Home Screen	Auto Rotation ON	Pass	
Touch Input	function test	Pass	
Display autorotation		Pass	
ARCORE app		Pass	
Snapdragon camera app stream	Auto Rotation OFF	Pass	
Snapdragon camera app still image	Auto Rotation OFF	Pass	
Snapdragon camera app UI	Auto Rotation OFF	Pass	
Snapdragon camera app video	Auto Rotation OFF	Pass	
Snapdragon camera app video mode UI	Auto Rotation OFF	Pass	
Snapdragon camera app stream	Auto Rotation ON	Pass	Fixed it in Landscape UI
Snapdragon camera app still image	Auto Rotation ON	Pass	Rotatable
Snapdragon camera app UI	Auto Rotation ON	Pass	Fixed it in Landscape UI
Snapdragon camera app video	Auto Rotation ON	Pass	Fixed it in Landscape UI
Snapdragon camera app video mode UI	Auto Rotation ON	Pass	Fixed it in Landscape UI
third-party camera app stream	Auto Rotation OFF	Pass	
third-party camera app still image	Auto Rotation OFF	Pass	
third-party camera app UI	Auto Rotation OFF	Pass	
third-party camera app video	Auto Rotation OFF	Pass	
third-party camera app video mode UI	Auto Rotation OFF	Pass	
third-party camera app stream	Auto Rotation ON	Pass	
third-party camera app still image	Auto Rotation ON	Pass	
third-party camera app UI	Auto Rotation ON	Pass	
third-party camera app video	Auto Rotation ON	Pass	
third-party camera app video mode UI	Auto Rotation ON	Pass	
Display Port		Pass	
Youtube player		Pass	
External Display(Vysor)	Virtual Display	Pass	
Screenshot Orientation (Recent button)		Fail	
THRPI-203 : Display Will rotate 90 degrees in the photo editing screen		Fail	portrait view
THRPI-210: QR Reader App (built-in) is rotated to Portrait		Fail	portrait view

#3 Validation Checklist – (v20251127)

		20251127_thorpe_dev_arcore	
Test Case	Description	Result	Comment
Boot Animation		Pass	
Setup Wizard orientation	Power on SetupWizard	Pass	
Home Screen	Auto Rotation OFF	Pass	
Home Screen	Auto Rotation ON	Pass	
Touch Input	function test	Pass	
Display autorotation		Pass	
ARCORE app		Pass	
Snapdragon camera app stream	Auto Rotation OFF	Pass	
Snapdragon camera app still image	Auto Rotation OFF	Pass	
Snapdragon camera app UI	Auto Rotation OFF	Pass	
Snapdragon camera app video	Auto Rotation OFF	Pass	
Snapdragon camera app video mode UI	Auto Rotation OFF	Pass	
Snapdragon camera app stream	Auto Rotation ON	Pass	Fixed it in Landscape UI
Snapdragon camera app still image	Auto Rotation ON	Pass	Rotatable
Snapdragon camera app UI	Auto Rotation ON	Pass	Fixed it in Landscape UI
Snapdragon camera app video	Auto Rotation ON	Pass	Fixed it in Landscape UI
Snapdragon camera app video mode UI	Auto Rotation ON	Pass	Fixed it in Landscape UI
third-party camera app stream	Auto Rotation OFF	Pass	
third-party camera app still image	Auto Rotation OFF	Pass	
third-party camera app UI	Auto Rotation OFF	Pass	
third-party camera app video	Auto Rotation OFF	Pass	
third-party camera app video mode UI	Auto Rotation OFF	Pass	
third-party camera app stream	Auto Rotation ON	Pass	
third-party camera app still image	Auto Rotation ON	Pass	
third-party camera app UI	Auto Rotation ON	Pass	
third-party camera app video	Auto Rotation ON	Pass	
third-party camera app video mode UI	Auto Rotation ON	Pass	
Display Port		Pass	
Youtube player		Pass	
External Display(Vysor)	Virtual Display	Pass	
Screenshot Orientation (Recent button)		Pass	
THRPI-203 : Display Will rotate 90 degrees in the photo editing screen		Pass	portrait view
THRPI-210: QR Reader App (built-in) is rotated to Portrait		Pass	portrait view

Next Step

1. Solve Camera bug – Closed
2. Solve Recent snapshot bug - Closed