

Grip Sensor Coverage consideration of the SGH-T869 for the User

FCC ID : A3LSGHT869

Date : 2011.11.09

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1. Overview

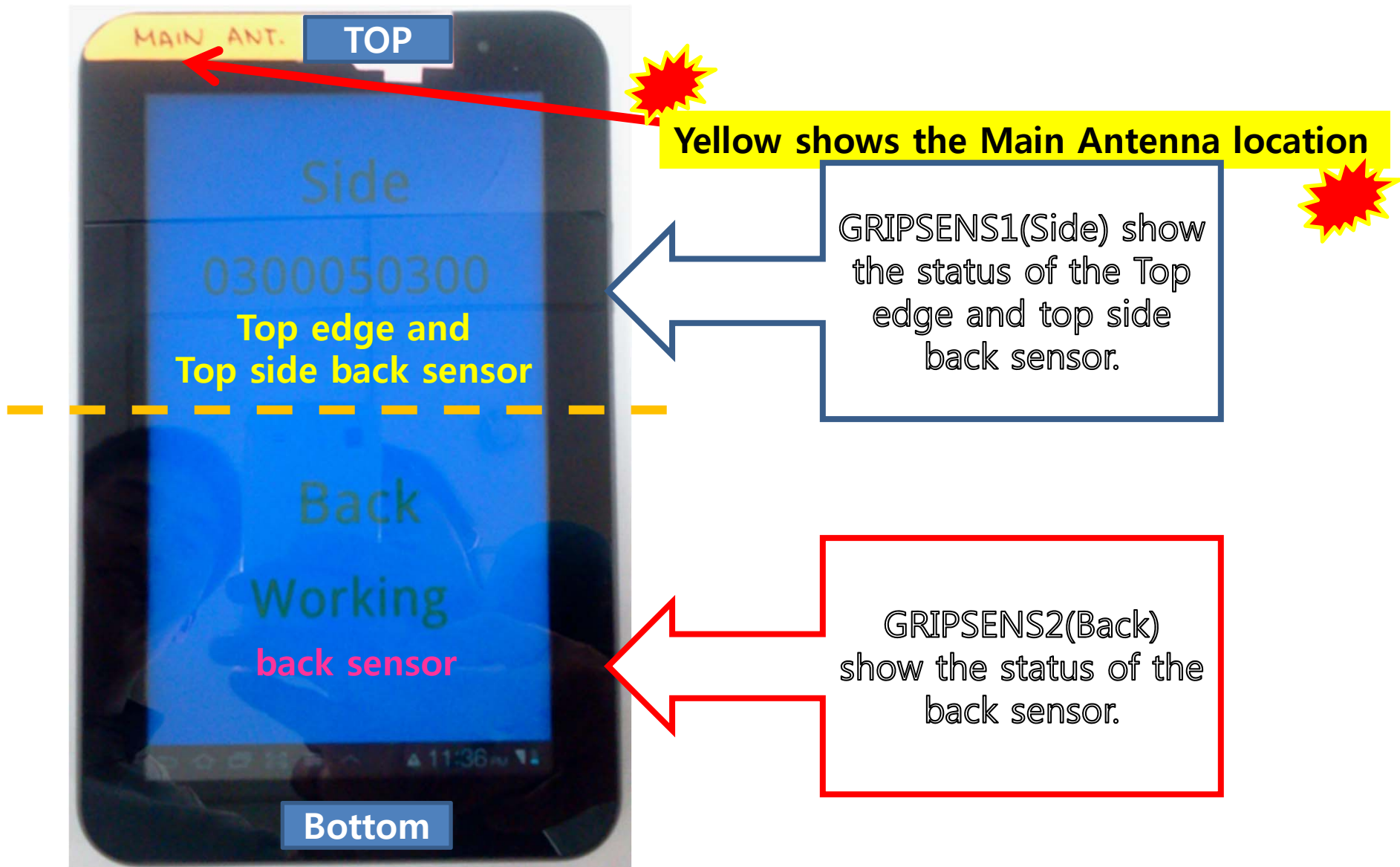
- The many test results are showed in this document to verify the Grip sensor coverage and triggering distance on the back side, top edge, left edge. Following is the cases.
- Grip sensor 1** : Top sensor (Top edge, Back)
- Grip sensor 2** : Back sensor (Back)
- Activating sensors
 - Top edge : Grip sensor1 activate.(Top edge)
 - Back : Grip sensor1 and 2 activate depends on position.(Top back , Back)
 - Left edge : sensor is not activated. As you know, we already tested SAR on 0mm separation distance with max power. (See table.1)

BAND	Set up	Max power [dBm]	Position	Space	SAR [W/kg]
GPRS850	2Tx GPRS Slots	31.07	Left edge	0 mm	0.760
GPRS1900	2Tx GPRS Slots	27.16	Left edge	0 mm	0.313
UMTS BAND II	RMC	22.40	Left edge	0 mm	0.371
UMTS BAND IV	RMC	22.57	Left edge	0 mm	0.447

Table.1

2. Introduction to the Grip sensor test tool

- I'd like to introduce you one function test of proximity sensor in the A3LSGHT869.

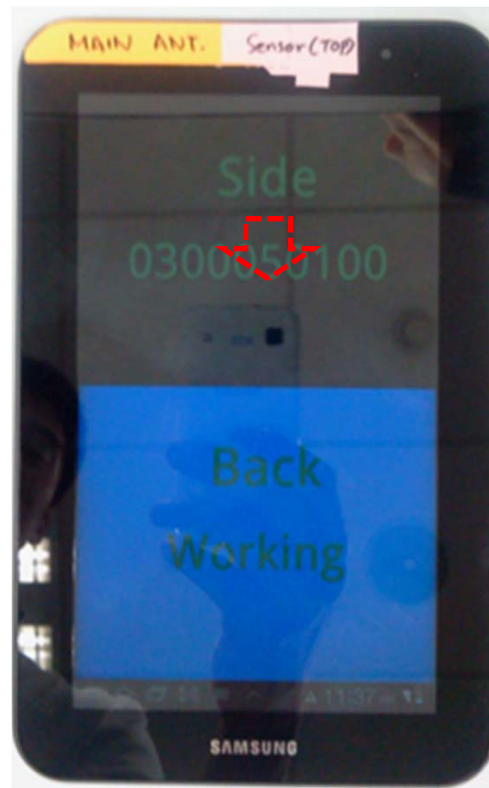


When the sensor detect something, that screen part becomes blue.

Grip Sensor1 activated
(Top edge or top side
back detect body)



Grip Sensor2 activated
(Back side detect body)

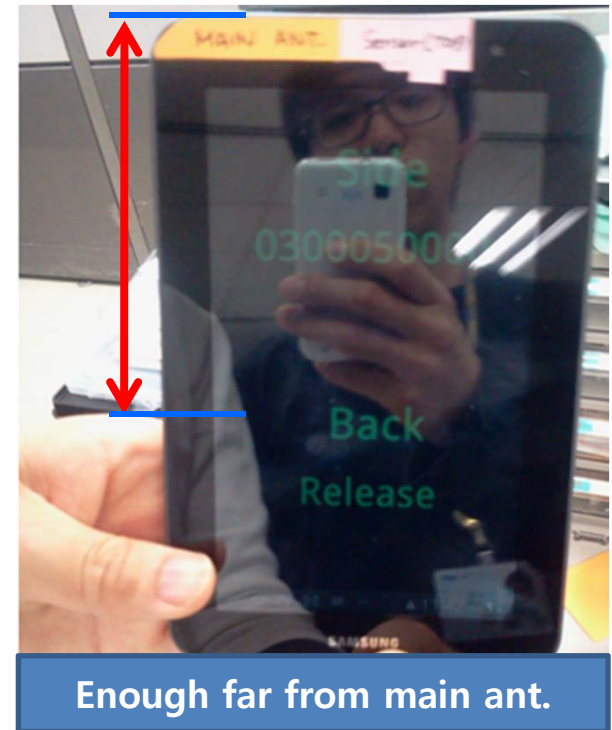
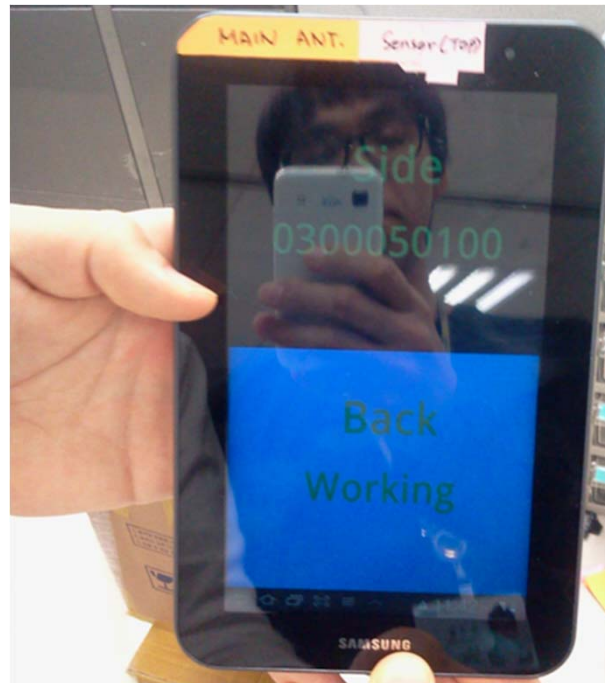
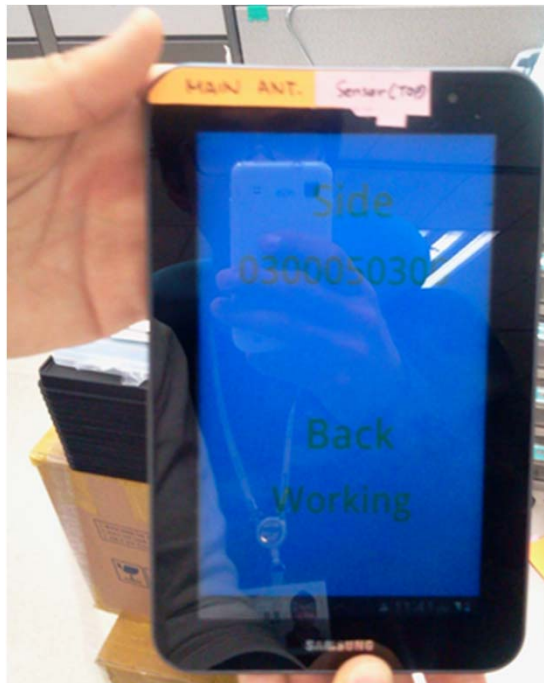


Grip Sensor1 & 2 activated
(Top side and Back detect
body simultaneously)



**3. The Grip sensor activate
on the back side
of the device**

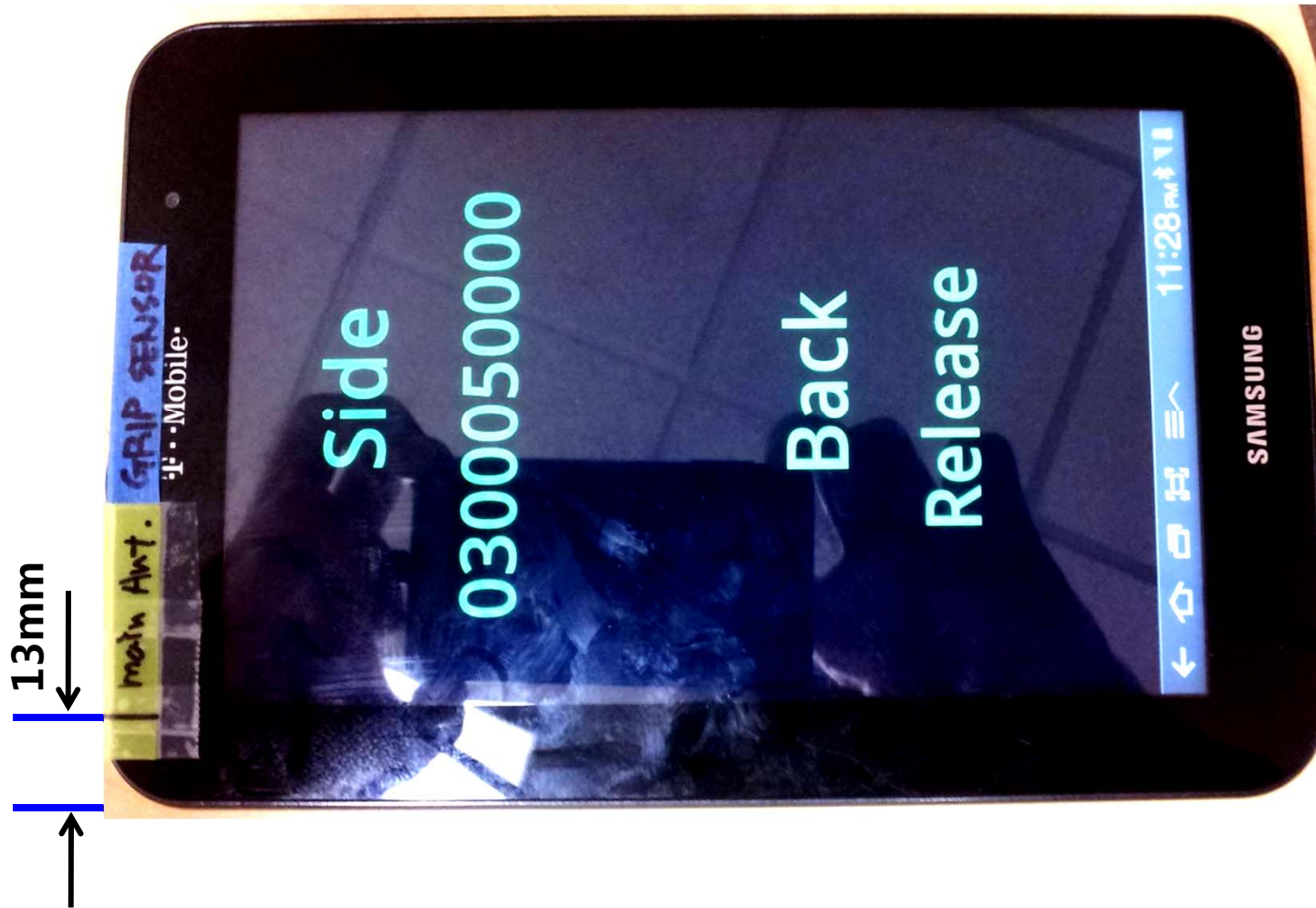
Back side triggering Test (0mm)



We can know that the Grip sensor 1 & 2 can detect back side from the above pictures because the sensor status screen part becomes blue.

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Back side triggering distance Test with Phantom (Transparent Front view)



Main Antenna



Grip sensor

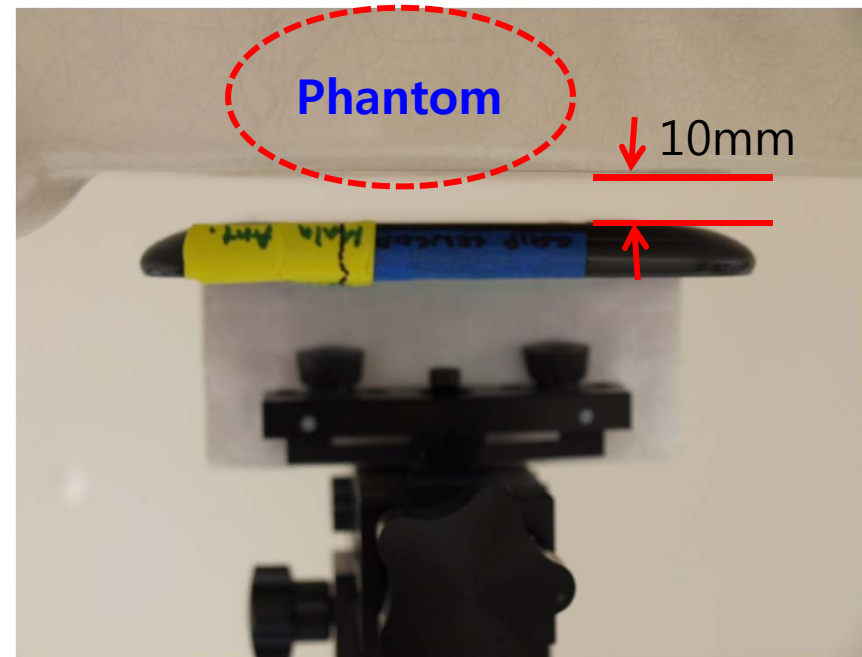
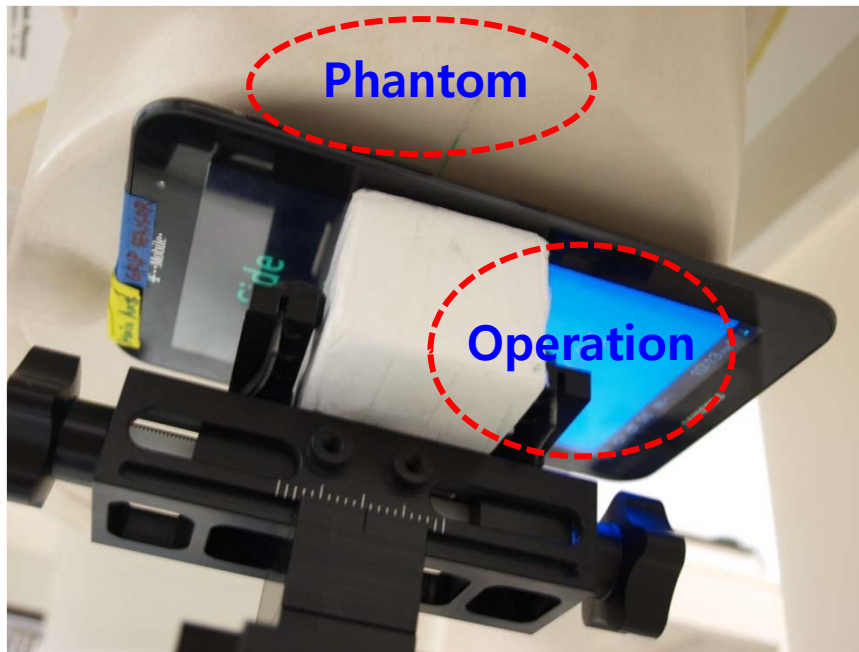


13mm Line
from Left edge

Back side triggering distance Test with Phantom

(con't)

The sensor at the back side is activated.
(Phantom overlap with Grip sensor)
(**Power reduction mode**)



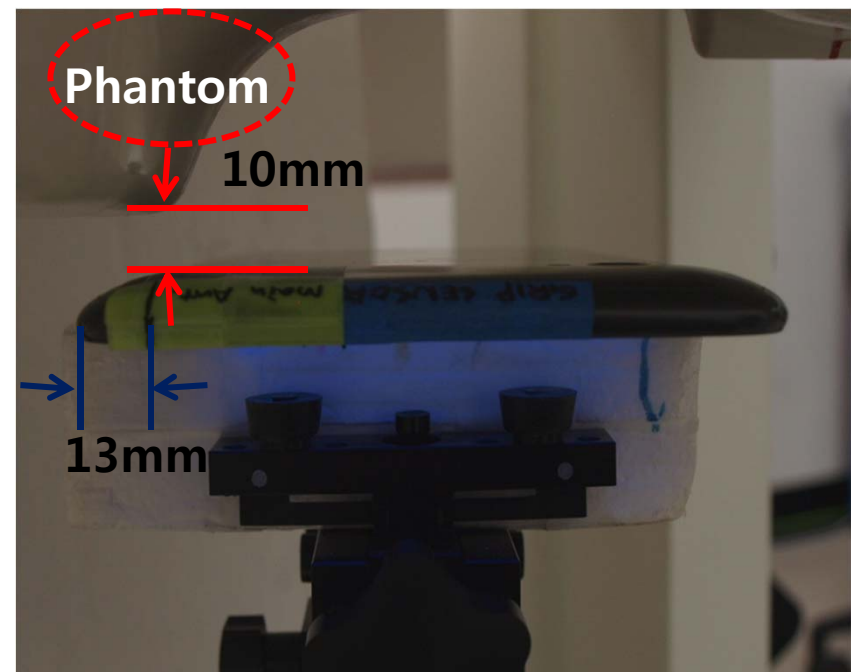
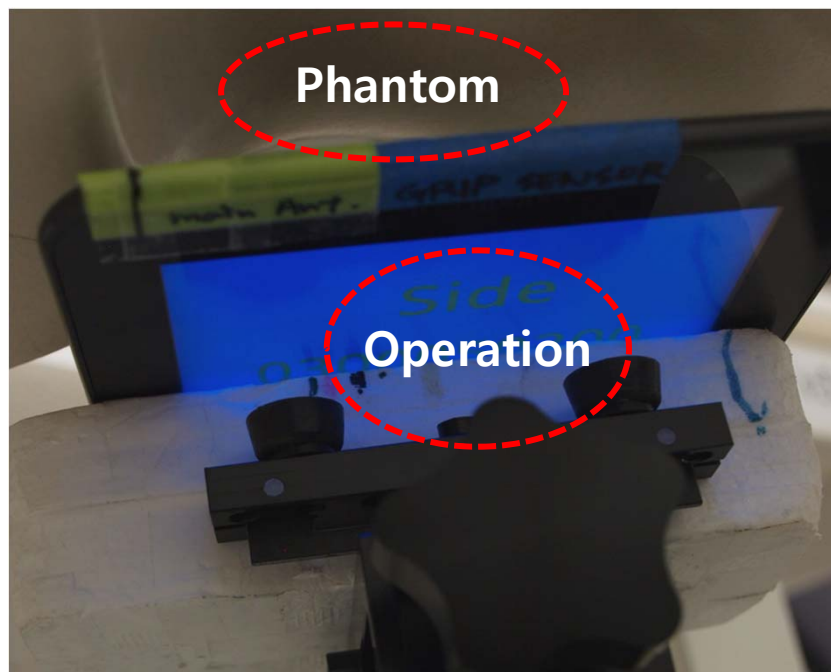
Back side triggering distance Test with Phantom

(con't)

The sensor at the back side is activated at **10mm** distance with the phantom edge.

Sensor activated distance away from left edge.

: **13mm** (**Power reduction mode**)



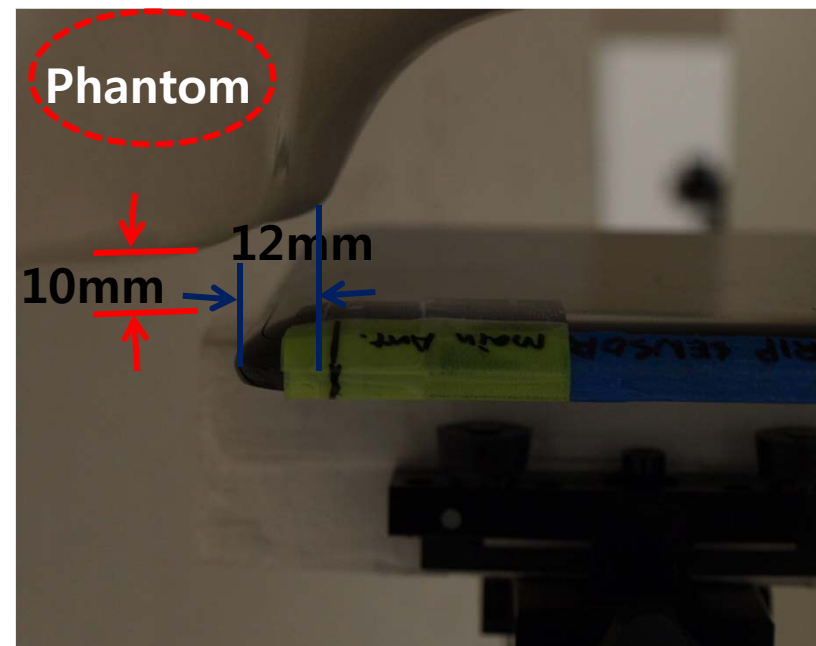
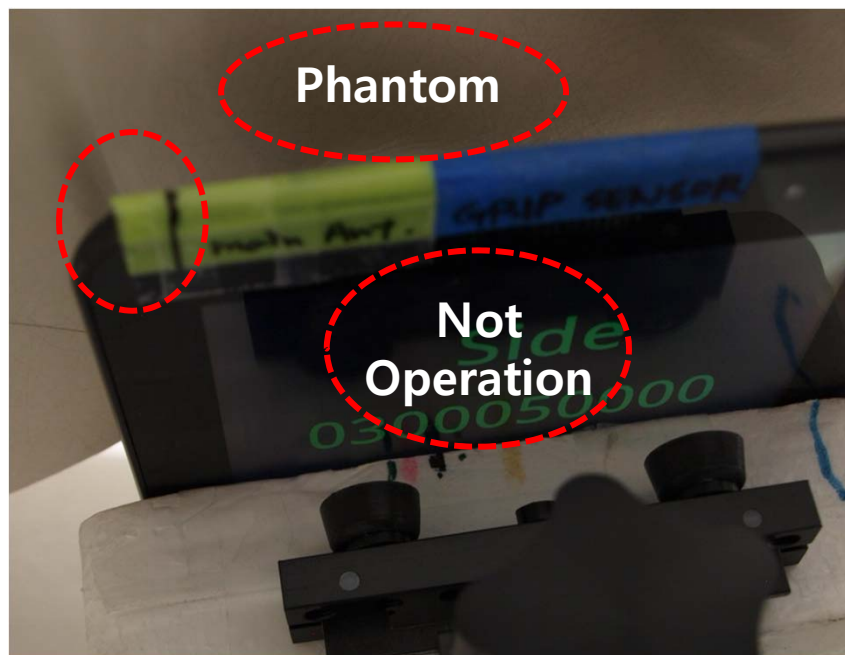
Back side triggering distance Test with Phantom

(con't)

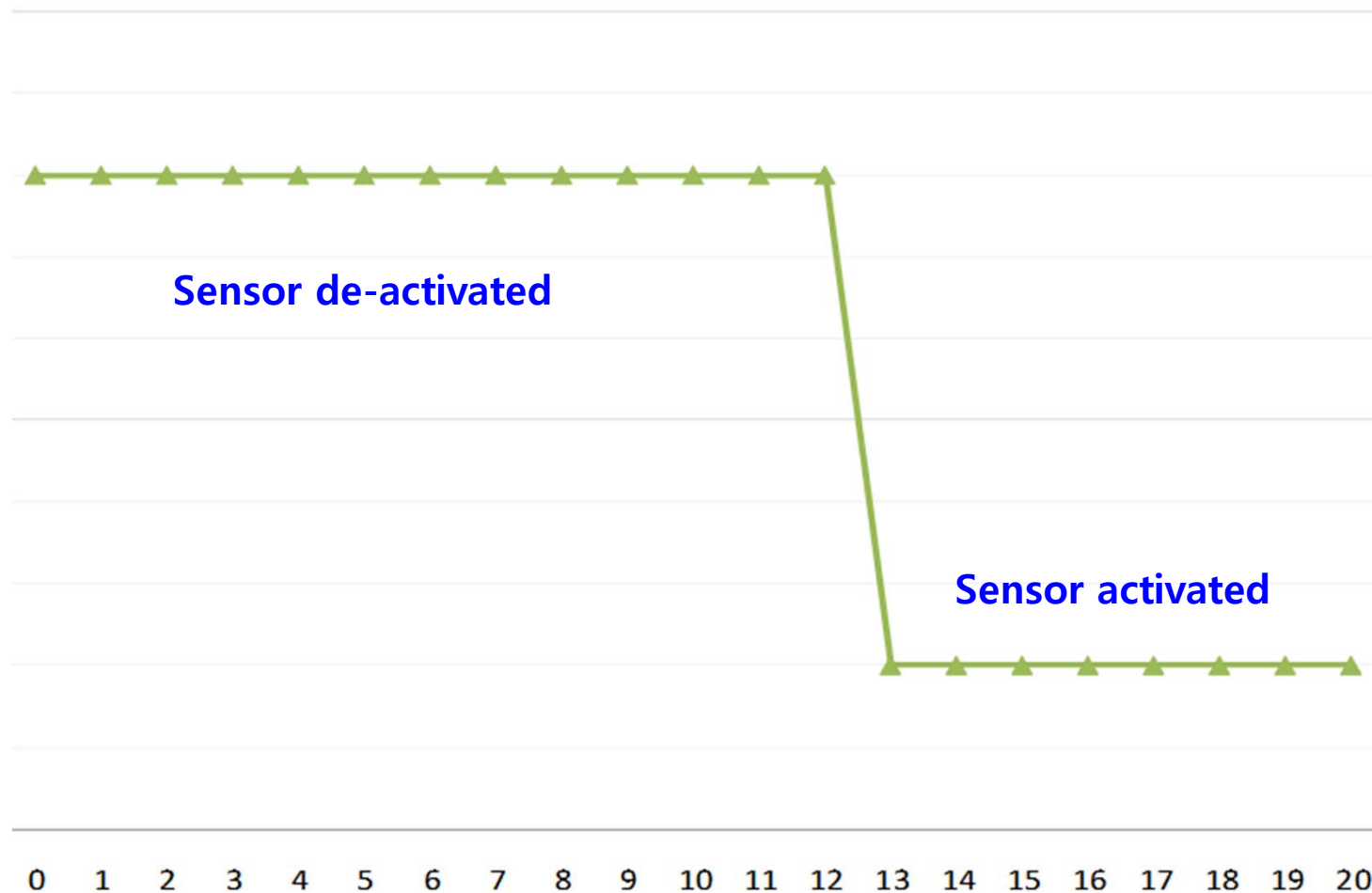
The sensor at the back side is deactivated at **10mm** distance with the phantom edge.

Sensor deactivated distance away from left edge.

: **12mm** (**Full Power mode**)



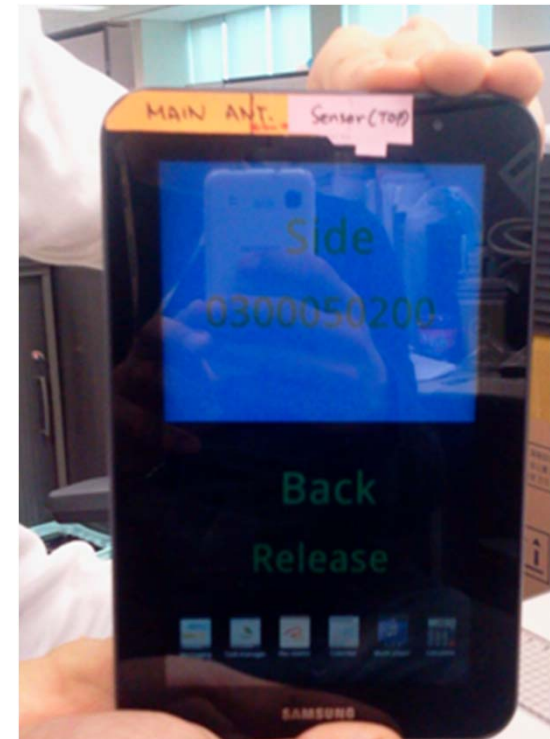
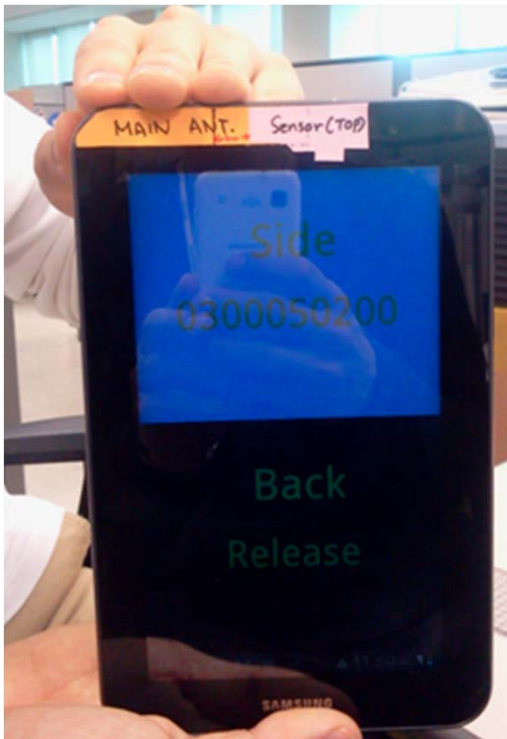
Sensor triggering distance away from left edge



Distance from left edge of DUT (mm)

**4. The Grip sensor activate
on the top edge
of the device**

Top edge triggering Test (0mm)



We can also know that the Grip sensor 1 can detect top edge from the above pictures because the sensor status screen part becomes blue.

Top edge triggering distance test with Phantom



Main Antenna



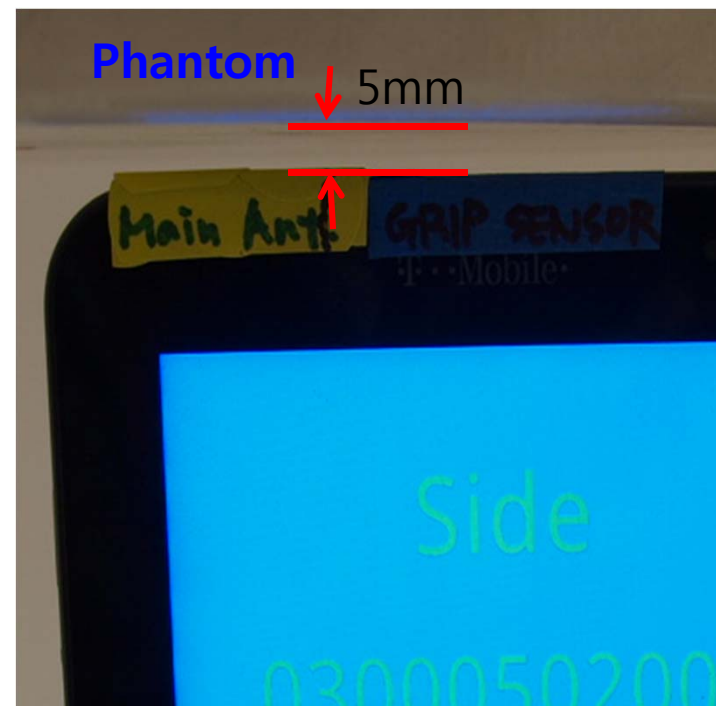
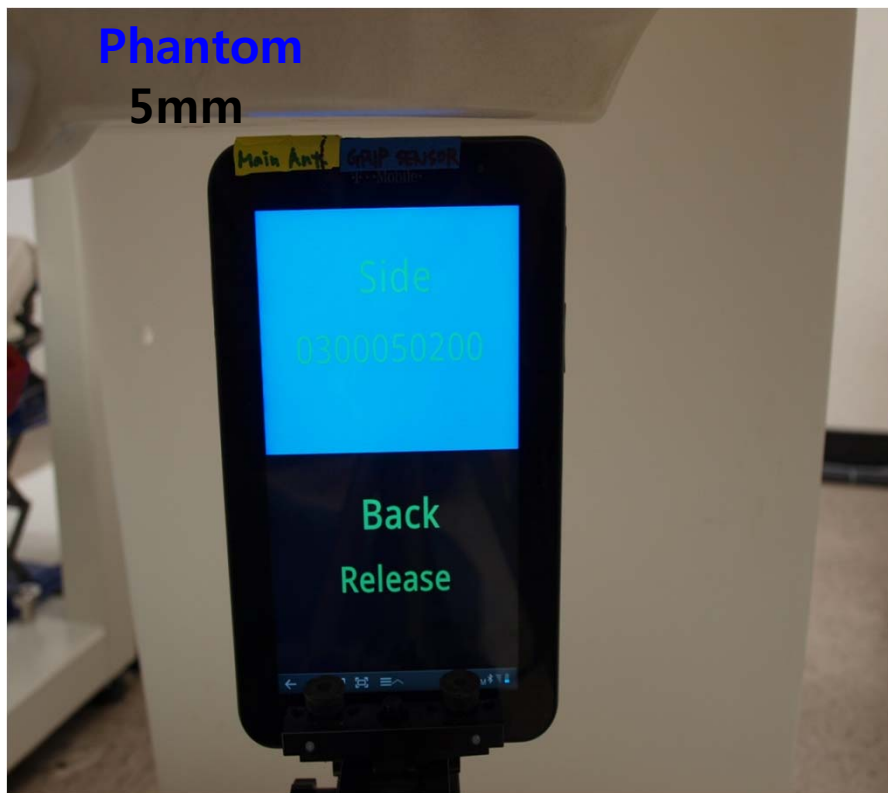
13mm Line
from Left edge



Top edge triggering distance test with Phantom^{Confidential}

(con't)

The sensor on the top edge is activated at **5mm** distance with the phantom. (overlap phantom with Grip sensor 1)
(**Power reduction mode**)



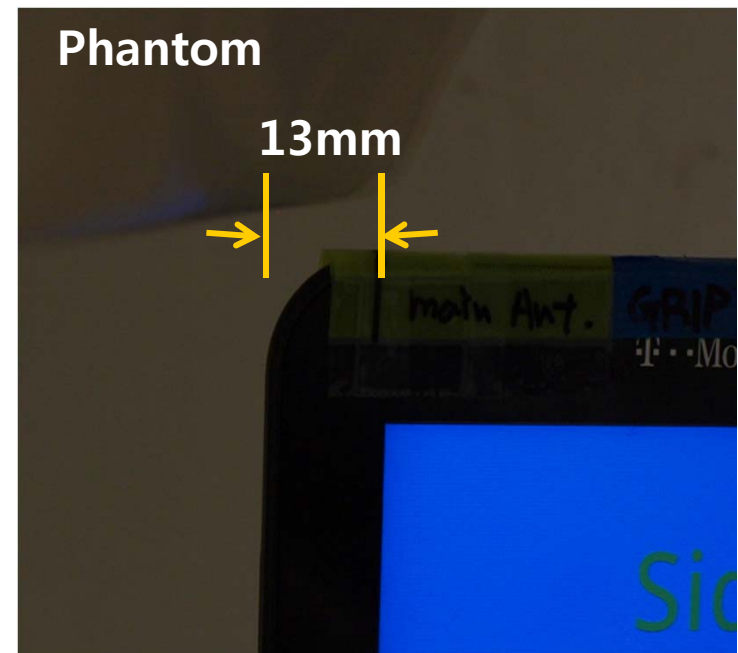
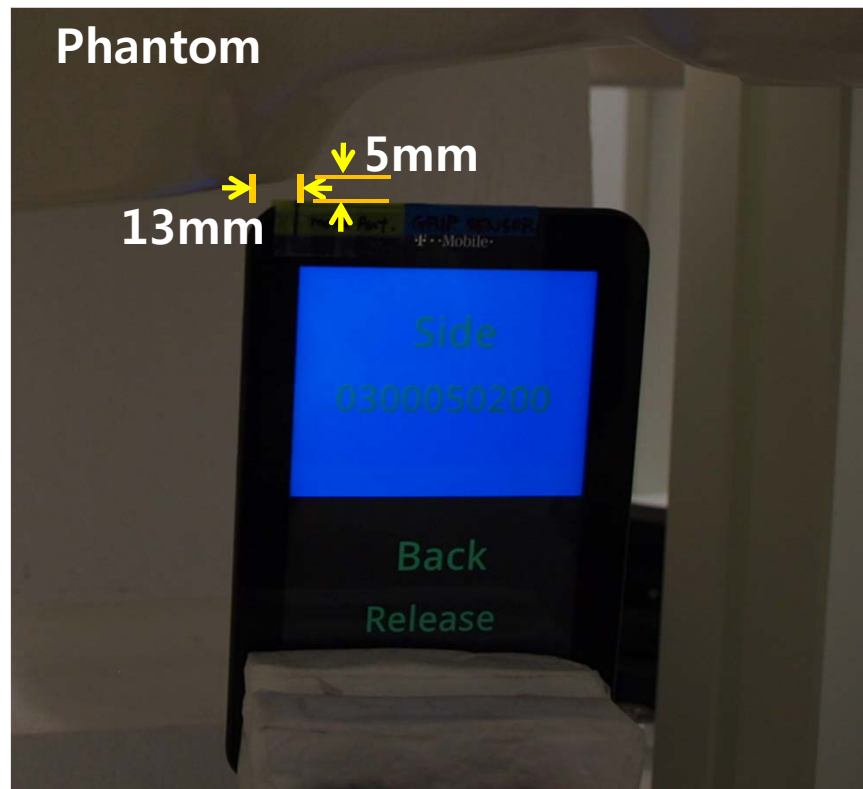
Top edge triggering distance test with Phantom ^{Confidential}

(con't)

The sensor at the Top side is activated at **5mm** distance with the phantom edge.

Sensor activated distance away from left edge.

: **13mm** (**Power reduction mode**)



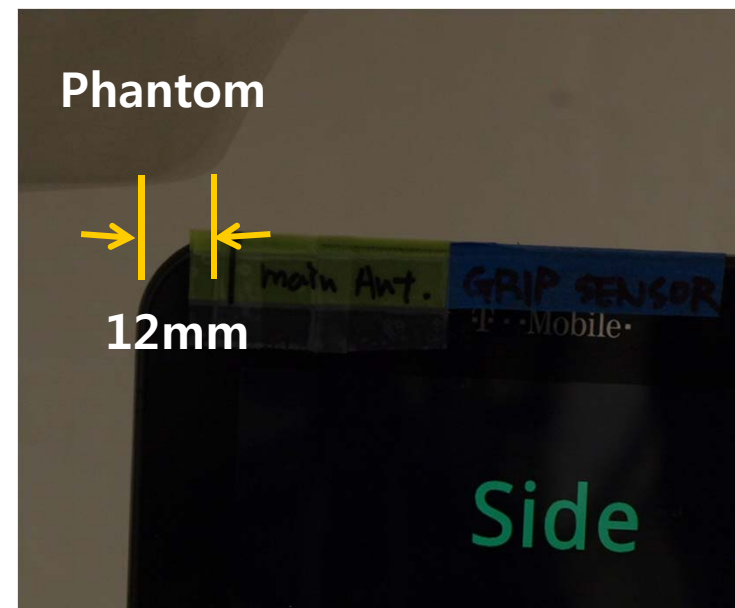
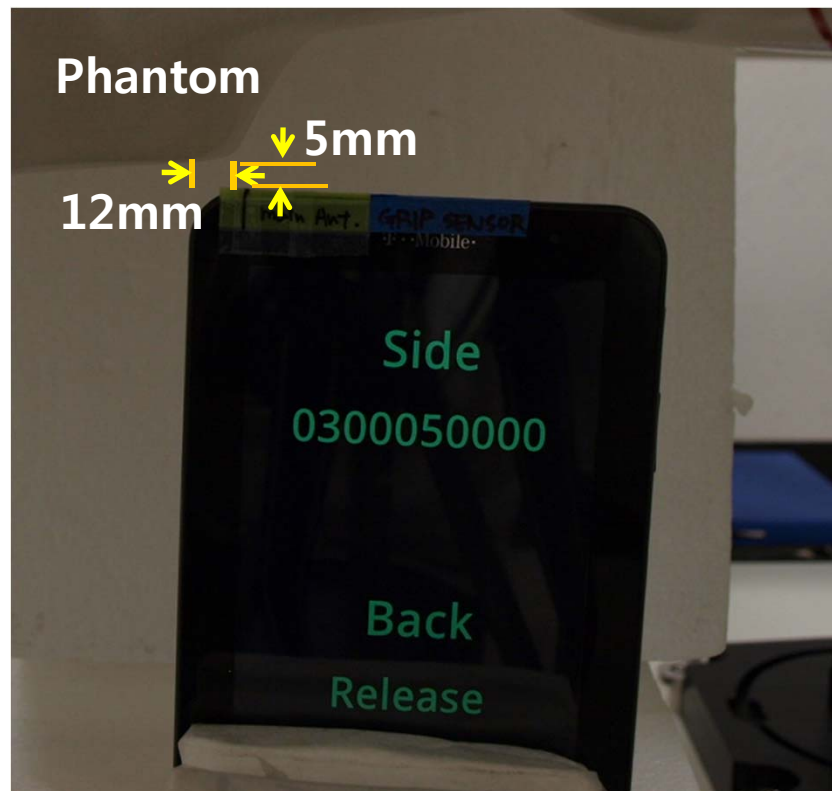
Top edge triggering distance test with Phantom^{Confidential}

(con't)

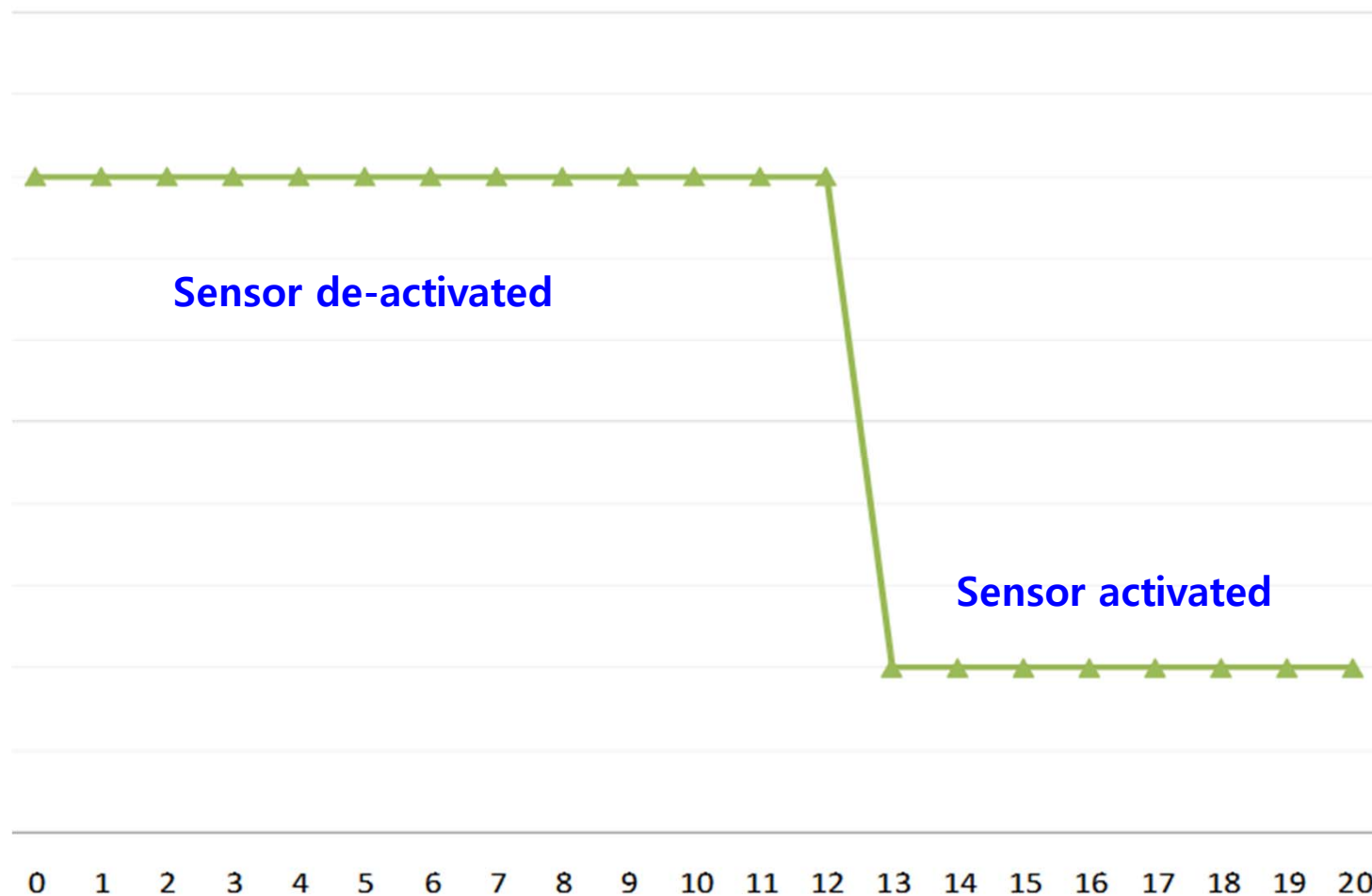
The sensor at the back side is deactivated at **5mm** distance with the phantom edge.

Sensor deactivated distance away from left edge.

: **12mm** (**Full Power mode**)

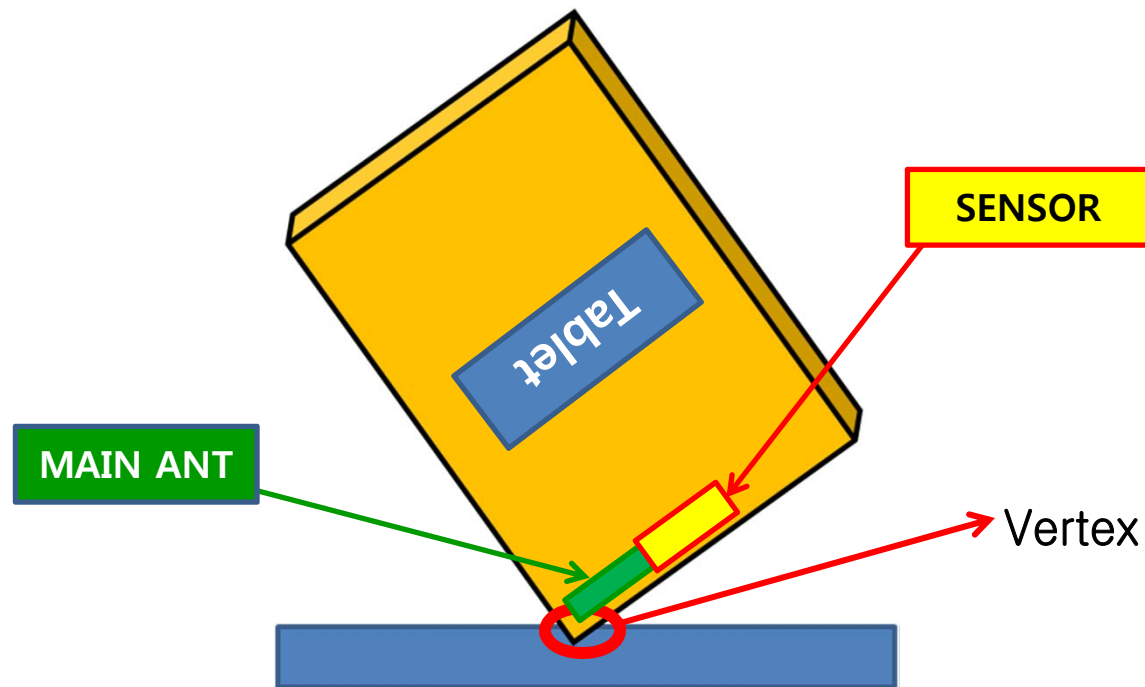


Sensor triggering distance away from left edge



Distance from left edge of DUT (mm)

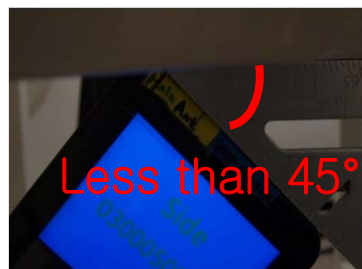
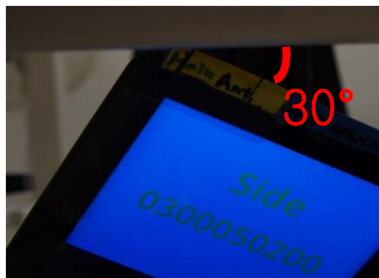
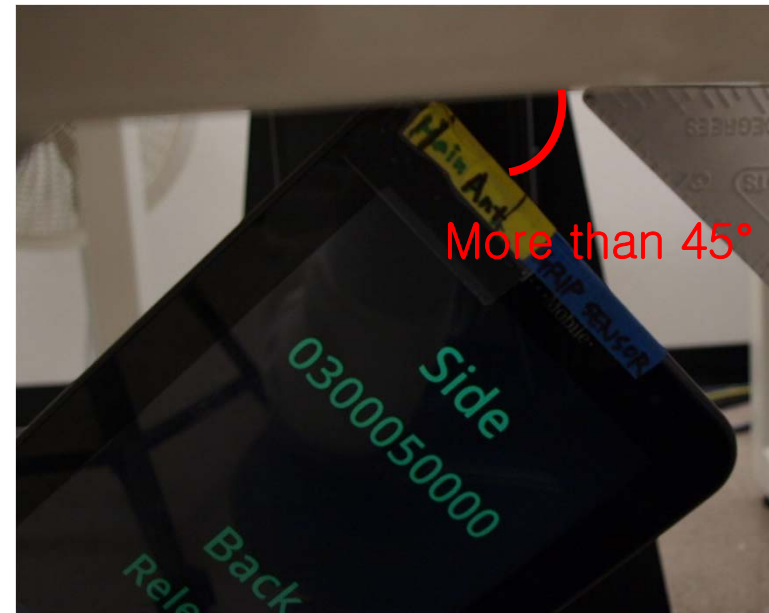
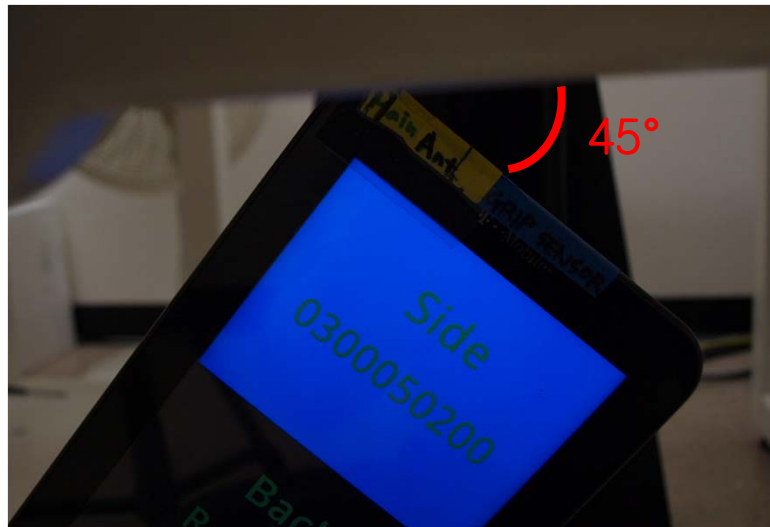
5. The Grip sensor on the corner vertex of the device



The corner vertex of the device doesn't trigger the phantom or user because the vertex is far from the sensor. The pictures in the next document show such a case.

Moreover the SAR Value is under limit at the corner vertex of the device. User can be protected from the transmitted power at the corner.

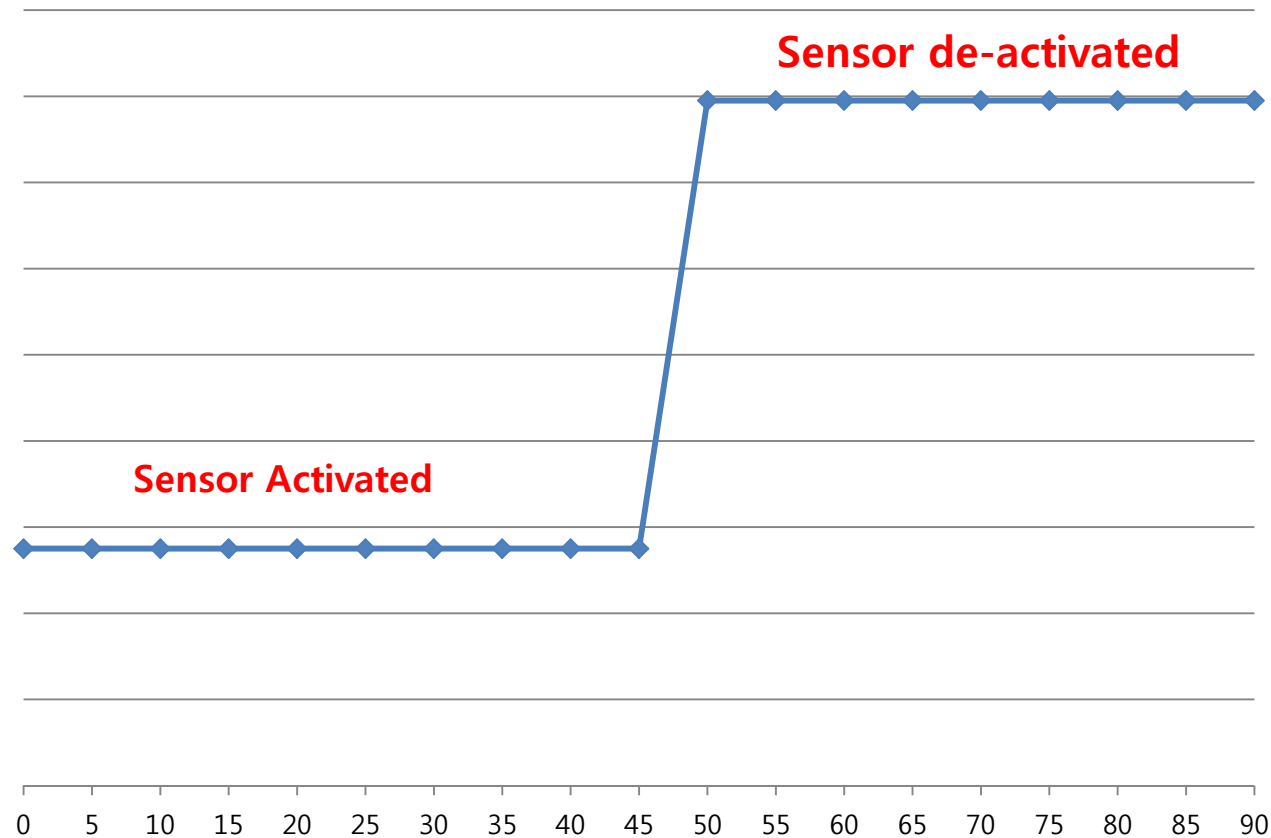
Triggering angle limit of the corner vertex



– Triggering angle limit : 45°

P2 TMO can not be recognized by grip sensor Higher than 45degree.(triggering angle is between phantom and top side of P2)

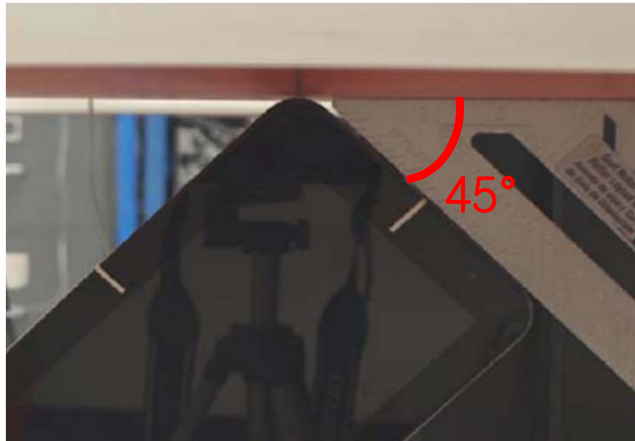
Triggering angle of Grip sensor between phantom and the top side



Angle between phantom and the DUT top side

The SAR Test result at the corner vertex of the device with the 45 degree to the phantom

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- FCC ID : A3LSGHT869
- Data : 11/04/11
- Test Lab : CCS

You can find it in the following table that the SAR Test result is under the limit at the corner vertex of the device.

Mode	mode	CH No.	Max Power(dBm)	Configuration	Spacing	SAR(W/Kg)	Max SAR
GPRS850	2Tx GPRS Slots	128	30.8	TOP LEFT Vertex EDGE	0 mm	N.A	0.871
		190	31			N.A	
		251	30.8			0.457	
GPRS1900	2Tx GPRS Slots	512	27.1	TOP LEFT Vertex EDGE	0 mm	N.A	0.694
		661	27.2			0.591	
		810	27.3			N.A	
WCDMA 2	RMC	9262	22.5	TOP LEFT Vertex EDGE	0 mm	0.888	1.1
		9400	22.4			0.67	
		9538	22.4			0.934	
WCDMA 4	RMC	1312	22.5	TOP LEFT Vertex EDGE	0 mm	0.684	1.04
		1412	22.6			0.802	
		1513	22.5			0.762	

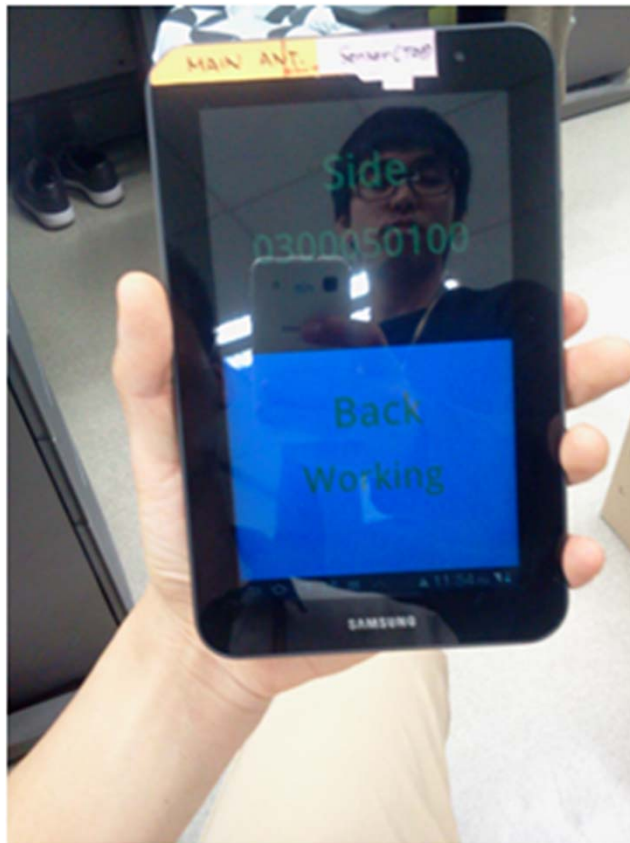
6. Triggering distance distribution on each side

7. Conclusion

- We performed many tests to verify the coverage of the Proximity sensor and found that the user can be protected well from the transmit power of the device in general usage.
- The sensor could work well in all the test cases except the left side of the device. However SAR at left edge is tested at 0mm with max power and SAR results are compliant to FCC rule.

** User case grip sensor test

Case #1



** User case grip sensor test

Case #2

