



FCC ID: A3LSMA505GT

**PROXIMITY SENSOR CONSIDERATIONS
(PER FCC KDB 616217 D04 V01r02)**

Last Revised: Jan 7th, 2019

Confidential

Note:

Sensor Triggering and reliability data in this document is provided by Samsung R&D Lab

INTRODUCTION



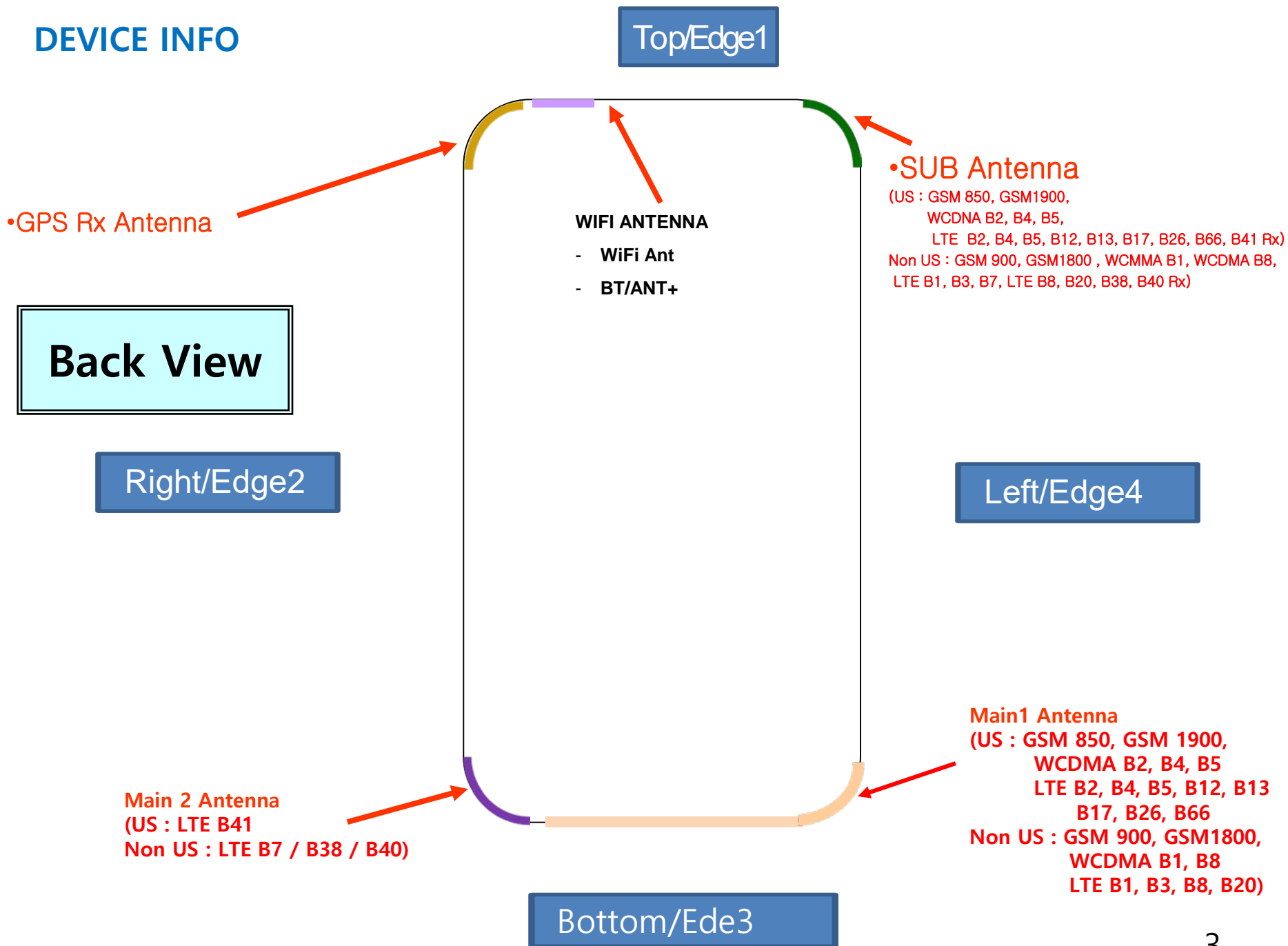
Confidential

Due to the operating configurations and exposure conditions required by Mobiles, proximity sensors are used in this device to reduce the maximum output power in specific wireless and operating modes to ensure SAR compliance.

This device uses a capacitive proximity sensor that is same metallic component as the transmitting antenna to facilitate triggering in typical user interactivity with the device.

This document discloses the procedures and data obtained to determine triggering distances for each sensor. An assessment of the antenna and sensor coverage of this device was also not required since the proximity sensor is the same metallic component as the transmitting antenna.

DEVICE INFO



SENSOR INFO (CONT'D)

Top/Edge1

Back View

Right/Edge2

Left/Edge4

Capacitive Proximity Sensor is the same metallic component as the transmitting antenna



Bottom/Edge3

I. TRIGGERING DISTANCE DETERMINATION
FOR SENSOR SENSING **BACK SIDE**

I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING BACK SIDE (Cont'd)

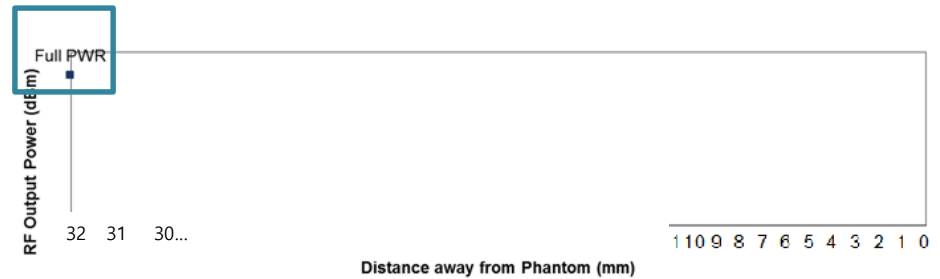
Steps:

1. Mobile is set to operate at its normal maximum output power (KDB616217 6.2.a)
2. Entire rear of the Mobile was positioned below a flat phantom filled with tissue-equivalent medium required for the test frequency range, positioned at least 20 mm further than the distance that triggers power reduction (KDB616217 6.2.b)

We positioned the device 32mm away from the Phantom for this test

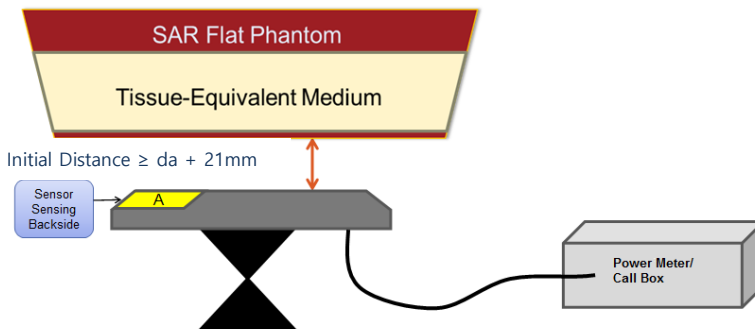
Initial dist = 10mm (triggering dist) + 21 mm

3. Cable used for power measurement does not interfere with proximity sensor. Cable losses were properly compensated to report the measured power results per KDB616217 6.2.c



| KDB 616217 D04 6.2.b | |
|----------------------|------|
| Measured Power [dBm] | |
| Distance[mm] | 31 |
| WCDMA B4 | 24.3 |
| WCDMA B2 | 23.5 |
| LTE B2 | 24.1 |
| LTE B4/66 | 24.1 |

Full Power

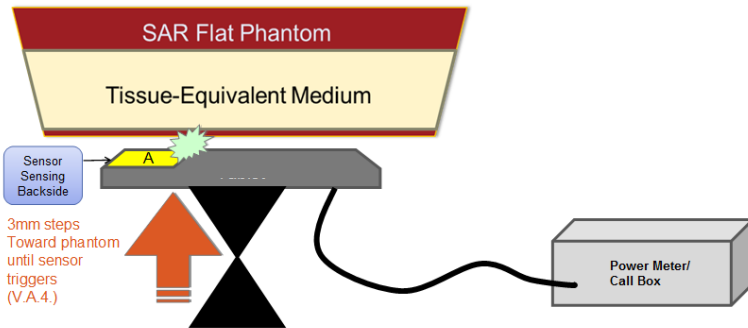
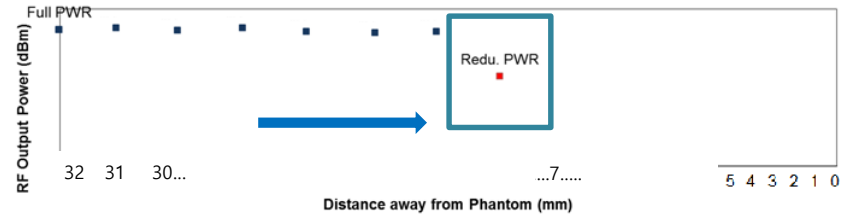


I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING BACK SIDE (Cont'd)

- Mobile is moved in 3mm steps toward the SAR Flat Phantom until the sensor activated per FCC KDB 616217 6.2.d

$d_{A1} = 10\text{mm}$

RF Output Power Over Distance toward Phantom KDB616217 6.2.4(3mm Steps toward Phantom)



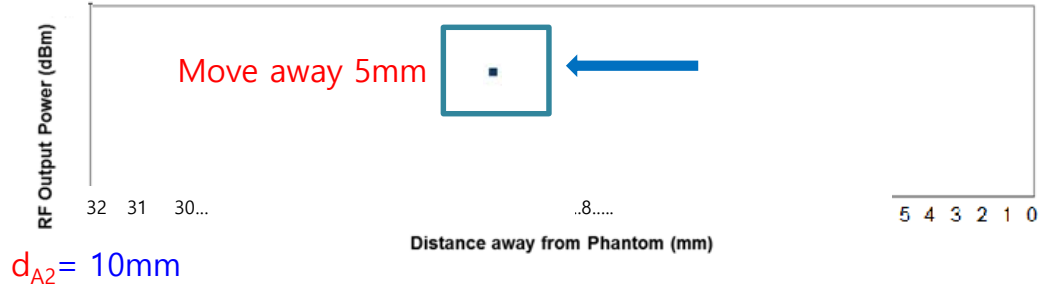
| KDB 616217 D04 6.2.d | | | | | | | | |
|----------------------|------|------|------|------|------|------|------|------|
| Measured Power [dBm] | | | | | | | | |
| Distance[mm] | 31 | 28 | 25 | 22 | 19 | 16 | 13 | 10 |
| WCDMA B4 | 24.3 | 24.1 | 24.2 | 24.3 | 23.8 | 23.9 | 24.3 | 21.2 |
| WCDMA B2 | 23.5 | 23.7 | 23.7 | 23.6 | 23.4 | 23.4 | 23.6 | 20.5 |
| LTE B2 | 24.1 | 24.2 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 22.1 |
| LTE B4 | 24.1 | 24.2 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 21.9 |
| LTE B66 | 24.1 | 24.2 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 21.9 |

Reduced Power

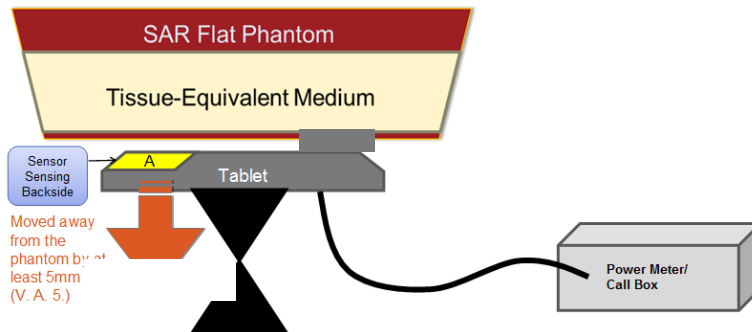
I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING BACK SIDE (Cont'd)

5. While the Mobile has a triggered sensor state, the Mobile was moved away from the SAR Flat phantom by at least 5mm per FCC KDB 616217 6.2.e.
6. The sensor was confirmed to de-activate when it moved at least 5mm from the last triggered position from Step 4.

RF Output Power Over Distance away from Phantom KDB616217 6.2.5(Moved away from the phantom by at least 5mm)



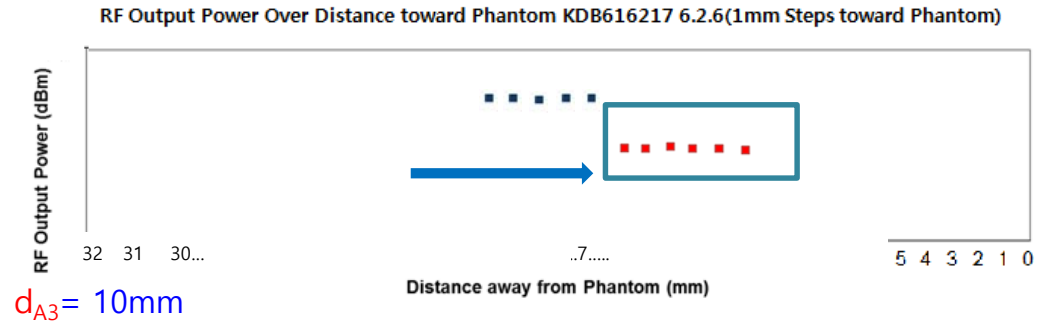
| KDB 616217 D04 6.2.e | | |
|----------------------|------|------|
| Measured Power [dBm] | | |
| Distance[mm] | 15 | 10 |
| WCDMA B4 | 24.3 | 21.2 |
| WCDMA B2 | 23.5 | 20.5 |
| LTE B2 | 24.1 | 22.1 |
| LTE B4 | 24.1 | 21.9 |
| LTE B66 | 24.1 | 21.9 |



Full Power

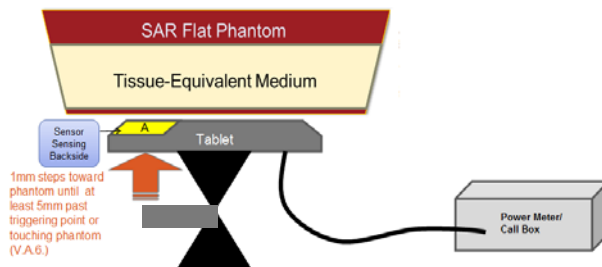
I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING BACK SIDE (Cont'd)

- Mobile is moved again toward the SAR Flat Phantom, but now in 1mm steps until at least 5mm past the sensor triggering point (or when the Mobile touched the phantom) per FCC KDB 616217 6.2.f



| KDB 616217 D04 6.2.f | | | | | | | | | | | |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|
| Measured Power [dBm] | | | | | | | | | | | |
| Distance[mm] | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 |
| WCDMA B4 | 24.2 | 24.3 | 23.8 | 23.9 | 24.3 | 23.9 | 21.1 | 21.0 | 21.1 | 21.0 | 21.1 |
| WCDMA B2 | 23.7 | 23.6 | 23.4 | 23.4 | 23.6 | 23.4 | 20.4 | 20.6 | 20.5 | 20.6 | 20.5 |
| LTE B2 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 24.2 | 22.0 | 21.9 | 22.1 | 21.9 | 22.1 |
| LTE B4 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 24.2 | 21.8 | 21.7 | 21.8 | 21.7 | 21.8 |
| LTE B66 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 24.2 | 21.8 | 21.7 | 21.8 | 21.7 | 21.8 |

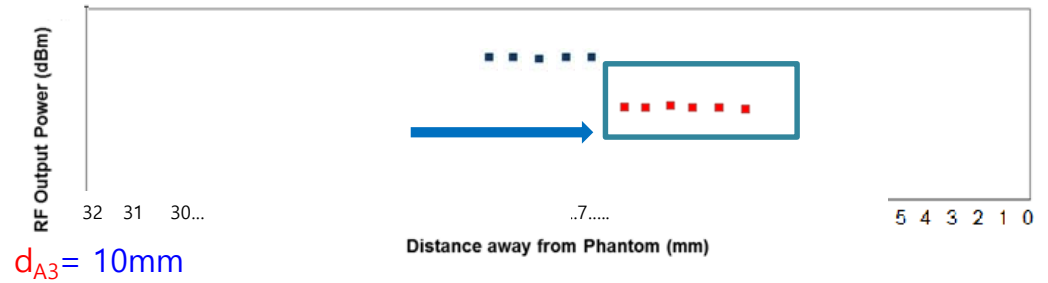
Reduced Power



I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING BACK SIDE (Cont'd)

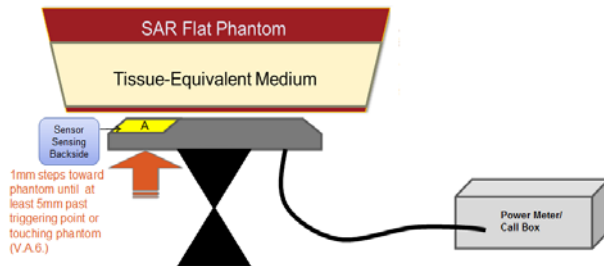
8. Since the Device was not touching the phantom 5mm beyond the triggering distance determined from Step 7, it was moved in 3mm steps toward the SAR phantom until the Device touched the phantom to confirm that the sensor remained triggered through out and thus the maximum power staying reduced per FCC KDB 616217 6.2.g.

RF Output Power Over Distance toward Phantom KDB616217 6.2.6(1mm Steps toward Phantom)



Confirmed Sensor remained Reduced Power.

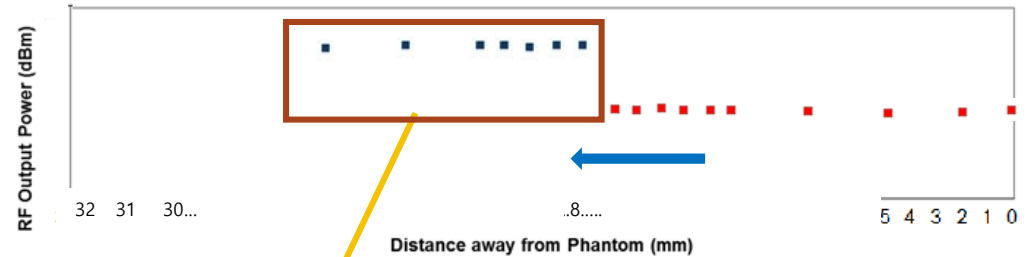
| KDB 616217 D04 6.2.g | | | | | |
|----------------------|------|------|------|------|------|
| Measured Power [dBm] | | | | | |
| Distance[mm] | 10 | 7 | 4 | 1 | 0 |
| WCDMA B4 | 21.2 | 21.1 | 21.0 | 21.1 | 21.0 |
| WCDMA B2 | 20.5 | 20.4 | 20.6 | 20.5 | 20.6 |
| LTE B2 | 22.1 | 22.0 | 21.9 | 22.1 | 21.9 |
| LTE B4 | 21.9 | 21.8 | 21.7 | 21.8 | 21.7 |
| LTE B66 | 21.9 | 21.8 | 21.7 | 21.8 | 21.7 |



I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING BACK SIDE (Cont'd)

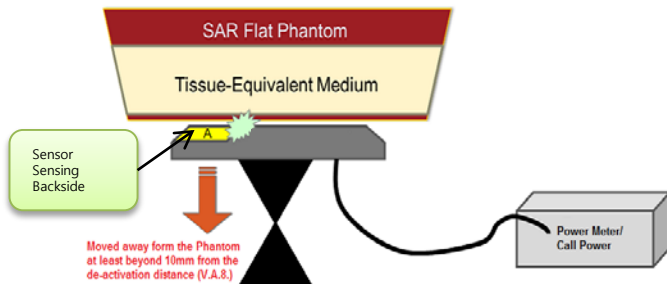
9. The process is then reversed by moving the Mobile away from the phantom according to steps KDB 616217 6.2.d to 6.2.g, to determine triggering release, until it is at least 10 mm beyond the point that triggers the return of normal maximum power per KDB 616217 6.2.h

$$d_{A4} = 10\text{mm}$$



| KDB 616217 D04 6.2.h | | | | | | | | | | | | | |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Measured Power [dBm] | | | | | | | | | | | | | |
| Distance[mm] | 21 | 18 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 |
| WCDMA B4 | 24.3 | 23.9 | 24.2 | 24.3 | 23.8 | 23.9 | 24.3 | 23.9 | 21.1 | 21.0 | 21.1 | 21.0 | 21.0 |
| WCDMA B2 | 23.6 | 23.4 | 23.7 | 23.6 | 23.4 | 23.4 | 23.6 | 23.4 | 20.4 | 20.6 | 20.5 | 20.6 | 20.6 |
| LTE B2 | 24.0 | 24.2 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 24.2 | 22.0 | 21.9 | 22.1 | 21.9 | 21.9 |
| LTE B4 | 24.0 | 24.2 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 24.2 | 21.8 | 21.7 | 21.8 | 21.7 | 21.7 |
| LTE B66 | 24.0 | 24.2 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 24.2 | 21.8 | 21.7 | 21.8 | 21.7 | 21.7 |

Full Power



I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING BACK SIDE (Cont'd)

Conclusion:

According to FCC KDB 616217 6.2.k., to ensure all production units are compliant, SAR testing should be performed 1mm closer than the smallest distance determined from the triggering tests $\{d_{A1}, d_{A2}, d_{A3}, d_{A4}\}$ at the reduced and maximum power.

SAR Test Distance from the **Back** of the mobile for Sensor sensing back side

= **minimum** $\{d_{A1}, d_{A2}, d_{A3}, d_{A4}\} - 1\text{mm}$

= **minimum** $\{10,10,10,10\} - 1\text{ mm}$

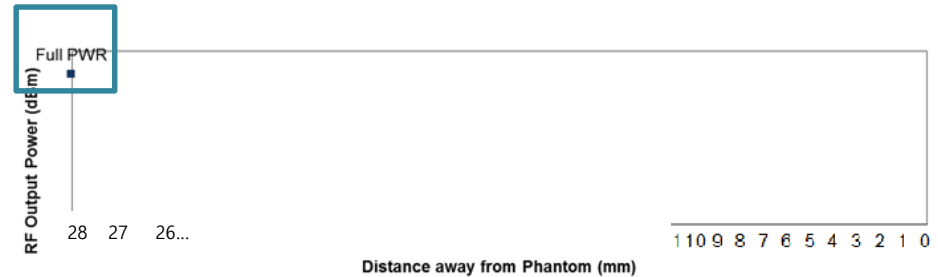
= **9 mm**

I. TRIGGERING DISTANCE DETERMINATION
FOR SENSOR SENSING **FRONT SIDE**

I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING FRONT SIDE

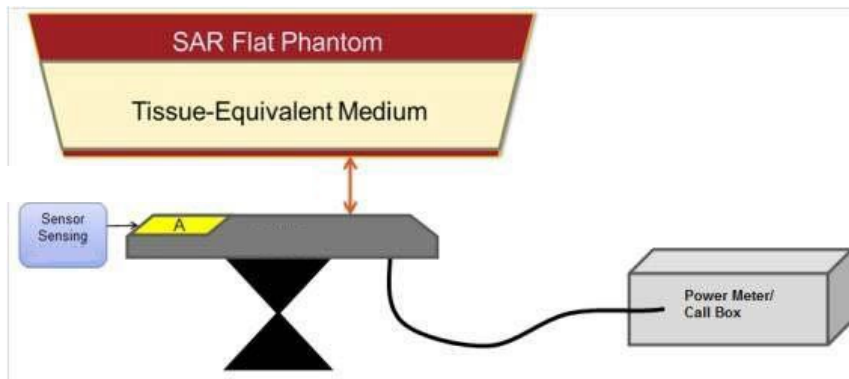
Steps:

1. Device is set to operate at its normal maximum output power (KDB616217 6.2.a)
2. Entire rear of the Device was positioned below a flat phantom filled with tissue-equivalent medium required for the test frequency range, positioned at least 20 mm further than the distance that triggers power reduction (KDB616217 6.2.b)
We positioned the device 25 mm away from the Phantom for this test
Initial dist = 2mm (triggering dist) + 21 mm
3. Cable used for power measurement does not interfere with proximity sensor. Cable losses were properly compensated to report the measured power results per KDB616217 6.2.c



| KDB 616217 D04 6.2.b | |
|----------------------|------|
| Measured Power [dBm] | |
| Distance[mm] | 23 |
| WCDMA B4 | 24.3 |
| WCDMA B2 | 23.5 |
| LTE B2 | 24.1 |
| LTE B4 | 24.1 |
| LTE B66 | 24.1 |

Full Power



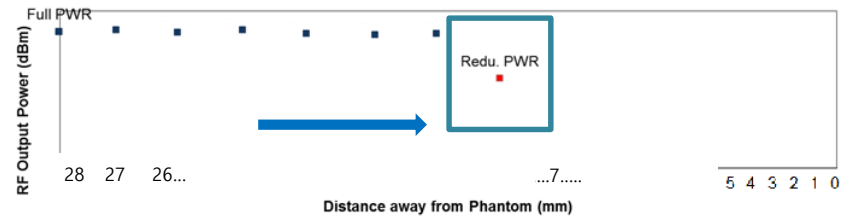
Ir

I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING FRONT SIDE

- Device is moved in 3mm steps toward the SAR Flat Phantom until the sensor activated per FCC KDB 616217 6.2.d

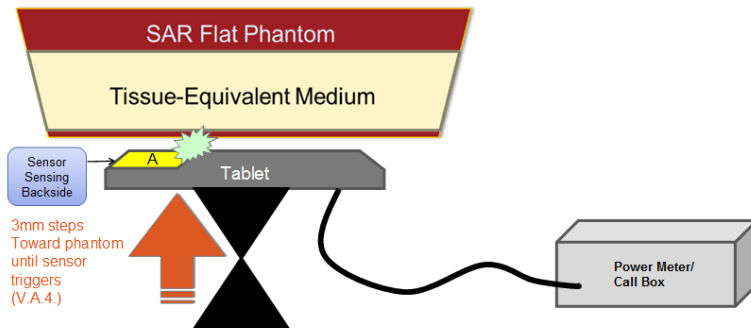
$$d_{A1} = 2 \text{ mm}$$

RF Output Power Over Distance toward Phantom KDB616217 6.2.4(3mm Steps toward Phantom)



| KDB 616217 D04 6.2.d | | | | | | | | | |
|----------------------|------|------|------|------|------|------|------|------|------|
| Measured Power [dBm] | | | | | | | | | |
| Distance[mm] | 26 | 23 | 20 | 17 | 14 | 11 | 8 | 5 | 2 |
| WCDMA B4 | 24.3 | 24.1 | 24.2 | 24.3 | 23.8 | 23.9 | 24.3 | 23.9 | 21.2 |
| WCDMA B2 | 23.5 | 23.7 | 23.7 | 23.6 | 23.4 | 23.4 | 23.6 | 23.4 | 20.5 |
| LTE B2 | 24.1 | 24.2 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 24.2 | 22.1 |
| LTE B4 | 24.1 | 24.2 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 24.2 | 21.9 |
| LTE B66 | 24.1 | 24.2 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 24.2 | 21.9 |

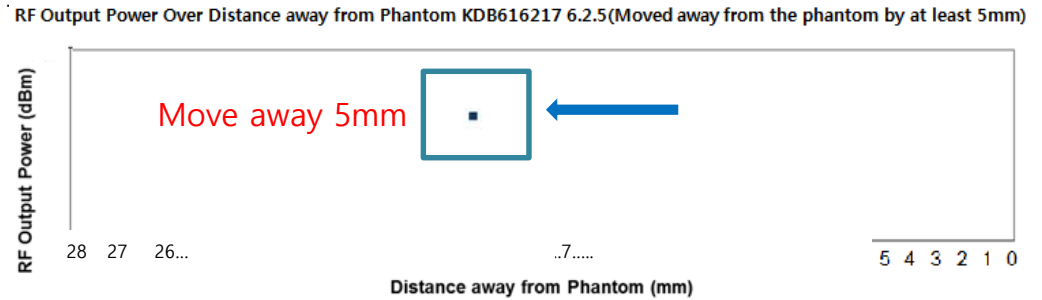
Reduced Power



I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING FRONT SIDE

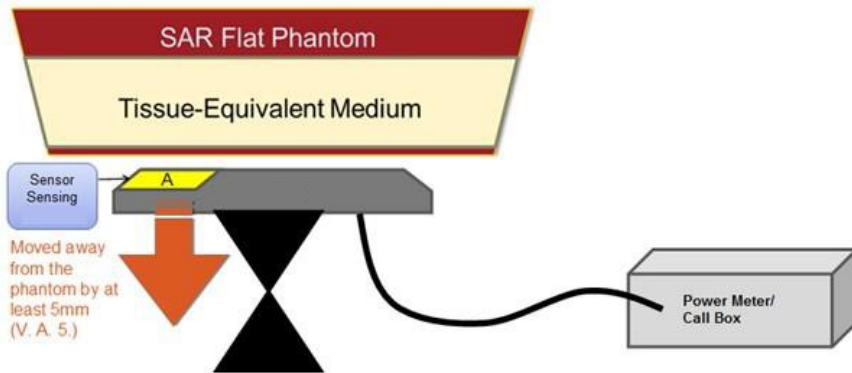
- While the Device has a triggered sensor state, Device was moved away from the SAR Flat phantom by at least 5mm per FCC KDB 616217 6.2.e.
- The sensor was confirmed to de-activate when moved at least 5mm from the last triggered position from Step 4.

$d_{A2} = 2 \text{ mm}$



| KDB 616217 D04 6.2.e | | |
|----------------------|------|------|
| Measured Power [dBm] | | |
| Distance[mm] | 7 | 2 |
| WCDMA B4 | 24.3 | 21.2 |
| WCDMA B2 | 23.5 | 20.5 |
| LTE B2 | 24.1 | 22.1 |
| LTE B4 | 24.1 | 21.9 |
| LTE B66 | 24.1 | 21.9 |

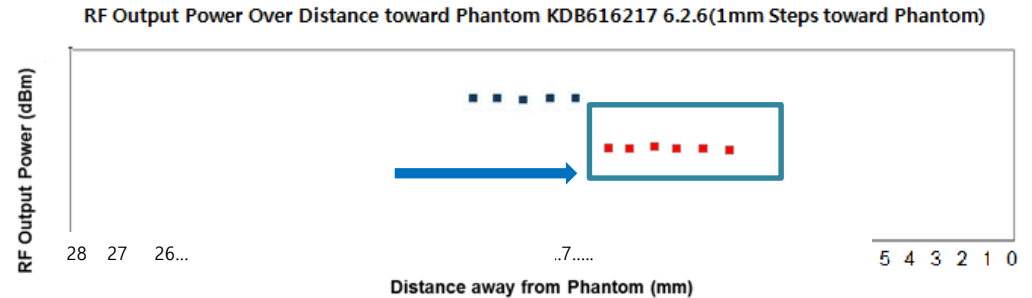
Full Power



I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING FRONT SIDE

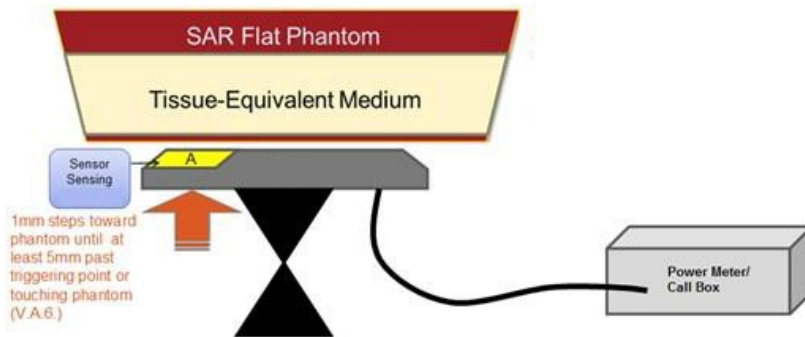
7. Device is moved again toward the SAR Flat Phantom, but now in 1mm steps until at least 5mm past the sensor triggering point (or when the Device touched the phantom) per FCC KDB 616217 6.2.f.

$$d_{A3} = 2 \text{ mm}$$



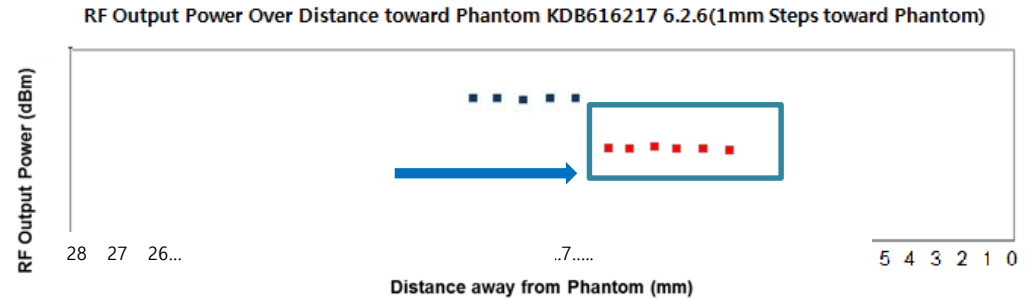
Reduced Power

| KDB 616217 D04 6.2.f | | | | | | | | | |
|----------------------|------|------|------|------|------|------|------|------|------|
| Measured Power [dBm] | | | | | | | | | |
| Distance[mm] | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| WCDMA B4 | 24.2 | 24.3 | 23.8 | 23.9 | 23.9 | 23.9 | 21.0 | 21.1 | 21.0 |
| WCDMA B2 | 23.7 | 23.6 | 23.4 | 23.4 | 23.4 | 23.4 | 20.6 | 20.5 | 20.6 |
| LTE B2 | 23.8 | 23.8 | 23.9 | 24.2 | 24.2 | 24.2 | 21.9 | 22.1 | 21.9 |
| LTE B4 | 23.8 | 23.8 | 23.9 | 24.2 | 24.2 | 24.2 | 21.7 | 21.8 | 21.7 |
| LTE B66 | 23.8 | 23.8 | 23.9 | 24.2 | 24.2 | 24.2 | 21.7 | 21.8 | 21.7 |



I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING FRONT SIDE

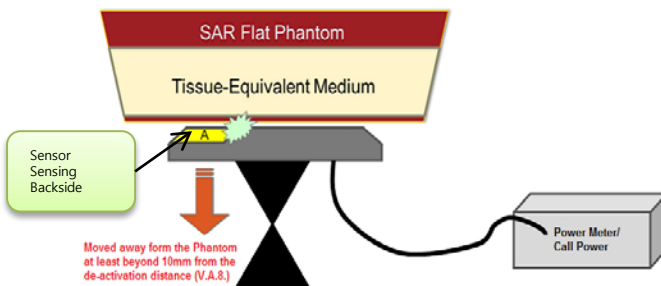
8. Since the Device was not touching the phantom 5mm beyond the triggering distance determined from Step 7, it was moved in 3 mm steps toward the SAR phantom until the Device touched the phantom to confirm that the sensor remained triggered through out and thus the maximum power staying reduced per FCC KDB 616217 6.2.g.



$$d_{A3} = 2\text{mm}$$

| KDB 616217 D04 6.2.g | | | |
|----------------------|------|------|------|
| Measured Power [dBm] | | | |
| Distance[mm] | 2 | 1 | 0 |
| WCDMA B4 | 21.1 | 21.0 | 21.1 |
| WCDMA B2 | 20.4 | 20.6 | 20.5 |
| LTE B2 | 22.0 | 21.9 | 22.1 |
| LTE B4 | 21.8 | 21.7 | 21.8 |
| LTE B66 | 21.8 | 21.7 | 21.8 |

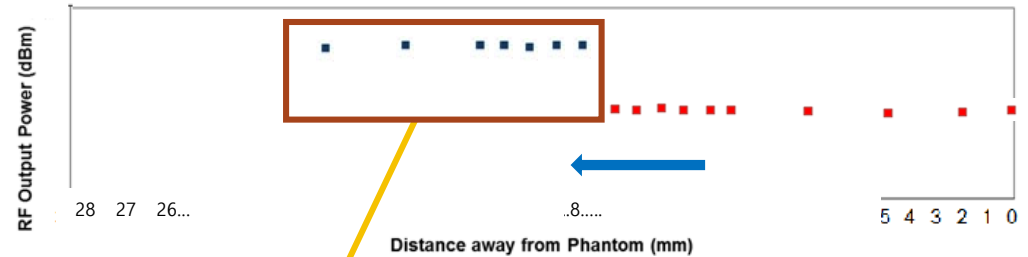
Confirmed Sensor remained
Reduced Power



I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING FRONT SIDE

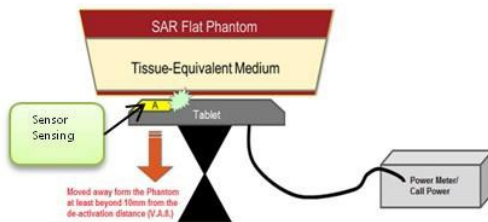
9. The process is then reversed by moving the Device away from the phantom according to steps KDB 616217 6.2.d to 6.2.g, to determine triggering release, until it is at least 10 mm beyond the point that triggers the return of normal maximum power per KDB 616217 6.2.h

$d_{A4} = 2 \text{ mm}$



| KDB 616217 D04 6.2.h | | | | | | | | | | | |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|
| Measured Power [dBm] | | | | | | | | | | | |
| Distance[mm] | 14 | 11 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| WCDMA B4 | 24.3 | 23.8 | 24.2 | 24.3 | 23.8 | 23.9 | 24.3 | 23.8 | 23.8 | 21.0 | 21.1 |
| WCDMA B2 | 23.6 | 23.4 | 23.7 | 23.6 | 23.4 | 23.4 | 23.6 | 23.4 | 23.4 | 20.6 | 20.5 |
| LTE B2 | 24.0 | 23.9 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 23.9 | 23.9 | 21.9 | 22.1 |
| LTE B4 | 24.0 | 23.9 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 23.9 | 23.9 | 21.7 | 21.8 |
| LTE B66 | 24.0 | 23.9 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 23.9 | 23.9 | 21.7 | 21.8 |

Full Power



I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING FRONT SIDE

Conclusion:

According to FCC KDB 616217 6.2.k., to ensure all production units are compliant, SAR testing was performed 1mm closer than the smallest distance determined from the triggering tests $\{d_{A1}, d_{A2}, d_{A3}, d_{A4}\}$ at the reduced and maximum power.

SAR Test Distance from the **Front SIDE**

= **minimum** $\{d_{A1}, d_{A2}, d_{A3}, d_{A4}\} - 1\text{mm}$

= **minimum** $\{2,2,2,2\} - 1\text{ mm}$

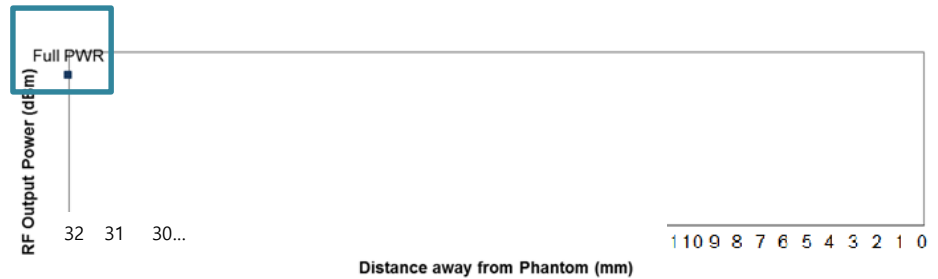
= **1 mm**

**III. TRIGGERING DISTANCE DETERMINATION
FOR SENSOR SENSING **BOTTOM SIDE****

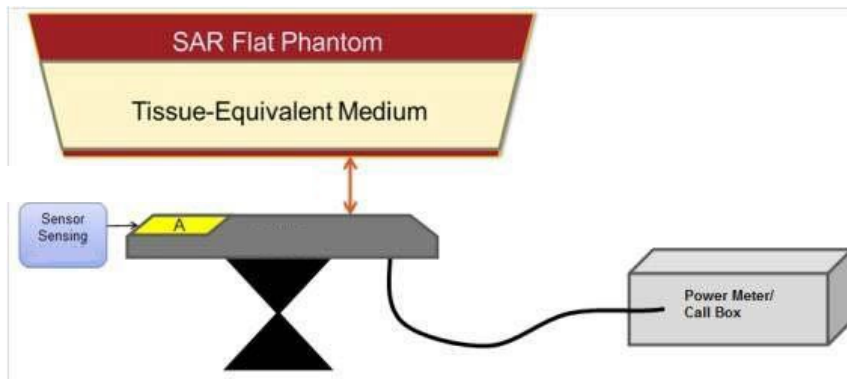
I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING **BOTTOM SIDE**

Steps:

1. Device is set to operate at its normal maximum output power (KDB616217 6.2.a)
2. Entire rear of the Device was positioned below flat phantom filled with tissue-equivalent medium required for the test frequency range, positioned at least 20 mm further than the distance that triggers power reduction (KDB616217 6.2.b)
We positioned the device 28 mm away from the Phantom for this test
Initial dist = 6mm (triggering dist) + 21 mm
3. Cable used for power measurement does not interfere with proximity sensor. Cable losses were properly compensated to report the measured power results per KDB616217 6.2.c



| KDB 616217 D04 6.2.b | |
|----------------------|------|
| Measured Power [dBm] | |
| Distance[mm] | 27 |
| WCDMA B4 | 24.3 |
| WCDMA B2 | 23.5 |
| LTE B2 | 24.1 |
| LTE B4 | 24.1 |
| LTE B66 | 24.1 |



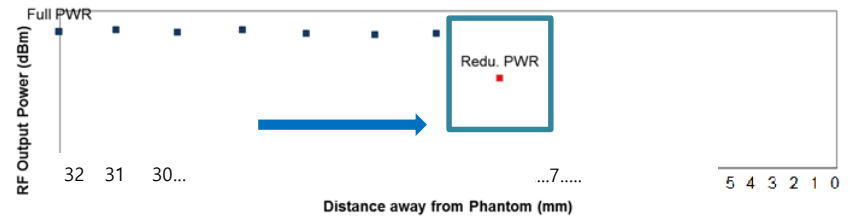
Ir

I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING BOTTOM SIDE

- Device is moved in 3mm steps toward the SAR Flat Phantom until the sensor activated per FCC KDB 616217 6.2.d

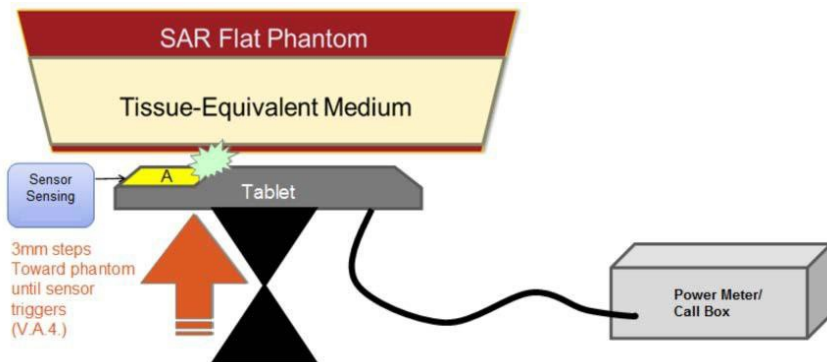
$$d_{A1} = 6 \text{ mm}$$

RF Output Power Over Distance toward Phantom KDB616217 6.2.4(3mm Steps toward Phantom)



| KDB 616217 D04 6.2.d | | | | | | | | |
|----------------------|------|------|------|------|------|------|------|------|
| Measured Power [dBm] | | | | | | | | |
| Distance[mm] | 27 | 24 | 21 | 18 | 15 | 12 | 9 | 6 |
| WCDMA B4 | 24.3 | 24.1 | 24.2 | 24.3 | 23.8 | 23.9 | 24.3 | 21.2 |
| WCDMA B2 | 23.5 | 23.7 | 23.7 | 23.6 | 23.4 | 23.4 | 23.6 | 20.5 |
| LTE B2 | 24.1 | 24.2 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 22.1 |
| LTE B4 | 24.1 | 24.2 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 21.9 |
| LTE B66 | 24.1 | 24.2 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 21.9 |

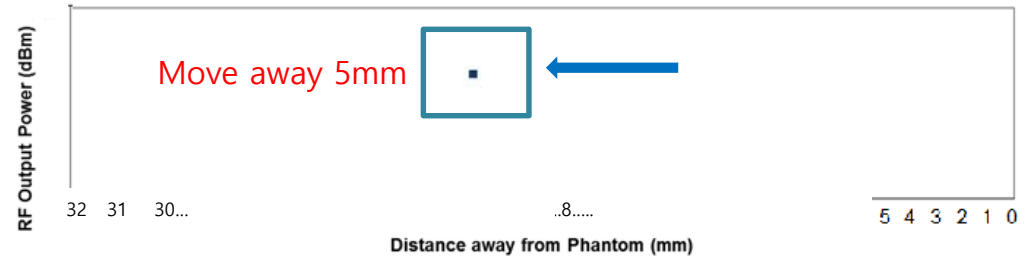
Reduced Power



I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING BOTTOM SIDE

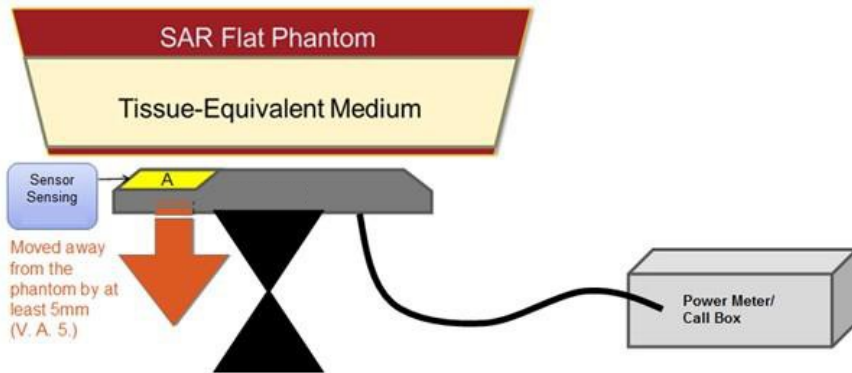
- While the Device has a triggered sensor state, the Device was moved away from the SAR Flat phantom by at least 5mm per FCC KDB 616217 6.2.e.
- The sensor was confirmed to de-activate when it moved at least 5mm from the last triggered position from Step 4.

RF Output Power Over Distance away from Phantom KDB616217 6.2.5(Moved away from the phantom by at least 5mm)



$d_{A2} = 6 \text{ mm}$

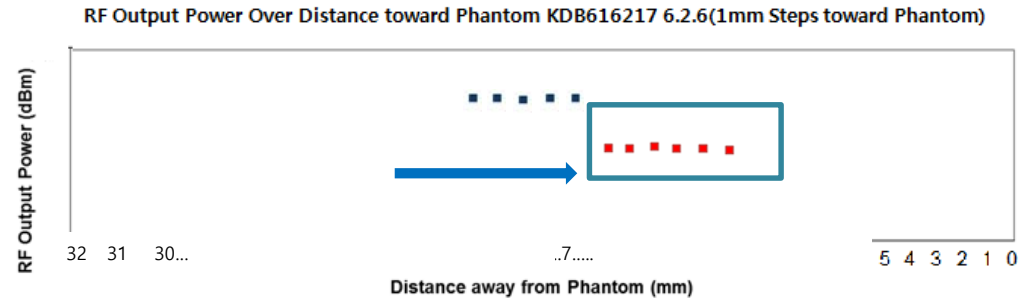
| KDB 616217 D04 6.2.e | | |
|----------------------|------|------|
| Measured Power [dBm] | | |
| Distance[mm] | 11 | 6 |
| WCDMA B4 | 24.3 | 21.2 |
| WCDMA B2 | 23.5 | 20.5 |
| LTE B2 | 24.1 | 22.1 |
| LTE B4 | 24.1 | 21.9 |
| LTE B66 | 24.1 | 21.9 |



I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING BOTTOM SIDE

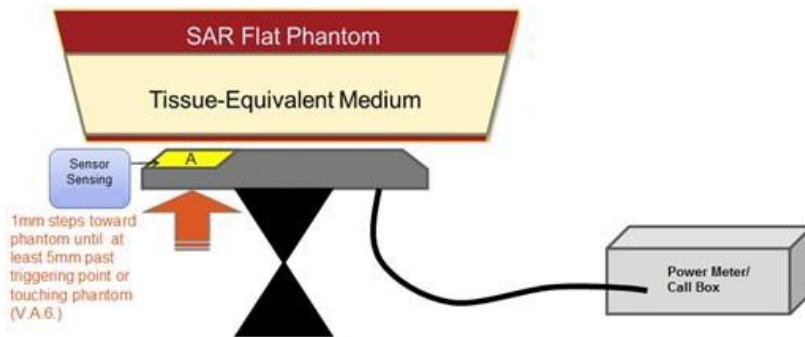
- Device is moved again toward the SAR Flat Phantom, but now in 1mm steps until at least 5mm past the sensor triggering point (or when the Device touched the phantom) per FCC KDB 616217 6.2.f.

$d_{A3} = 6 \text{ mm}$



| KDB 616217 D04 6.2.f | | | | | | | | | | | |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|
| Measured Power [dBm] | | | | | | | | | | | |
| Distance[mm] | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 |
| WCDMA B4 | 24.2 | 24.3 | 23.8 | 23.9 | 24.3 | 23.8 | 21.1 | 21.0 | 21.1 | 21.1 | 21.0 |
| WCDMA B2 | 23.7 | 23.6 | 23.4 | 23.4 | 23.6 | 23.4 | 20.4 | 20.6 | 20.5 | 20.5 | 20.6 |
| LTE B2 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 23.9 | 22.0 | 21.9 | 22.1 | 22.1 | 21.9 |
| LTE B4 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 23.9 | 21.8 | 21.7 | 21.8 | 21.8 | 21.7 |
| LTE B66 | 23.8 | 23.8 | 23.9 | 24.2 | 24.0 | 23.9 | 21.8 | 21.7 | 21.8 | 21.8 | 21.7 |

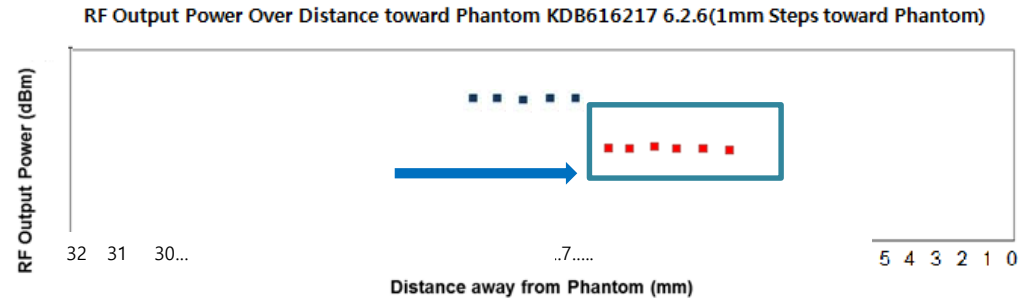
Reduced Power



I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING BOTTOM SIDE

8. Since the Device was not touching the phantom 5mm beyond the triggering distance determined from Step 7, it was moved in 3 mm steps toward the SAR phantom until the Device touched the phantom to confirm that the sensor remained triggered throughout and thus the maximum power staying reduced per FCC KDB 616217 6.2.g.

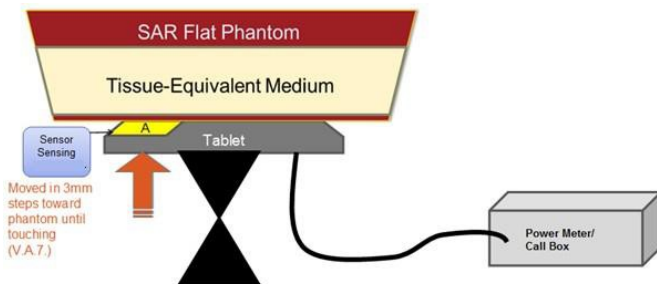
$$d_{A3} = 6\text{mm}$$



Confirmed Sensor remained Reduced Power.

| KDB 616217 D04 6.2.g | | | |
|----------------------|------|------|------|
| Measured Power [dBm] | | | |
| Distance[mm] | 6 | 3 | 0 |
| WCDMA B4 | 21.2 | 21.1 | 21.0 |
| WCDMA B2 | 20.5 | 20.4 | 20.6 |
| LTE B2 | 22.1 | 22.0 | 21.9 |
| LTE B4 | 21.9 | 21.8 | 21.7 |
| LTE B66 | 21.9 | 21.8 | 21.7 |

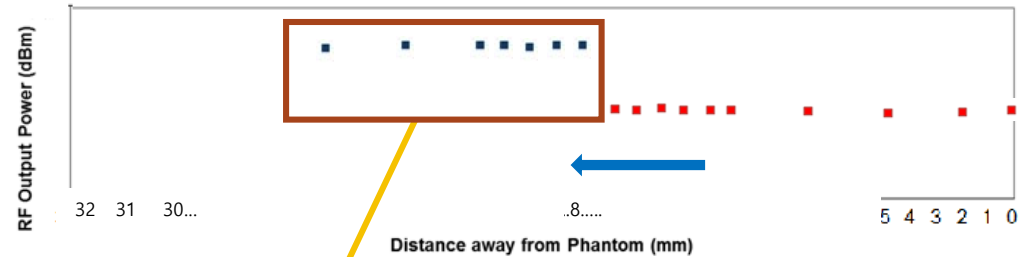
Confirmed Sensor remained Reduced Power



I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING BOTTOM SIDE

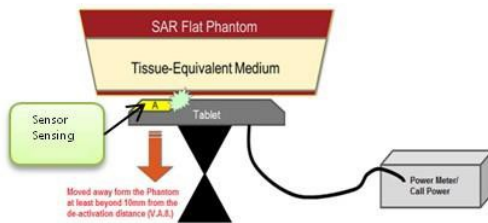
9. The process is then reversed by moving the Device away from the phantom according to steps KDB 616217 6.2.d to 6.2.g, to determine triggering release, until it is at least 10 mm beyond the point that triggers the return of normal maximum power per KDB 616217 6.2.h

$d_{A4} = 6 \text{ mm}$



| KDB 616217 D04 6.2.h | | | | | | | | | | | | | |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Measured Power [dBm] | | | | | | | | | | | | | |
| Distance[mm] | 17 | 14 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 |
| WCDMA B4 | 23.8 | 23.9 | 24.2 | 24.3 | 23.8 | 23.9 | 23.8 | 23.9 | 21.1 | 21.0 | 21.2 | 21.1 | 21.0 |
| WCDMA B2 | 23.4 | 23.4 | 23.7 | 23.6 | 23.4 | 23.4 | 23.4 | 23.4 | 20.4 | 20.6 | 20.5 | 20.4 | 20.6 |
| LTE B2 | 23.9 | 24.2 | 23.8 | 23.8 | 23.9 | 24.2 | 23.9 | 24.2 | 22.0 | 21.9 | 22.1 | 22.0 | 21.9 |
| LTE B4 | 23.9 | 24.2 | 23.8 | 23.8 | 23.9 | 24.2 | 23.9 | 24.2 | 21.8 | 21.7 | 21.9 | 21.8 | 21.7 |
| LTE B66 | 23.9 | 24.2 | 23.8 | 23.8 | 23.9 | 24.2 | 23.9 | 24.2 | 21.8 | 21.7 | 21.9 | 21.8 | 21.7 |

Full Power



I. TRIGGERING DISTANCE DETERMINATION FOR SENSOR SENSING FRONT SIDE

Conclusion:

According to FCC KDB 616217 6.2.k., to ensure all production units are compliant, SAR testing was performed 1mm closer than the smallest distance determined from the triggering tests $\{d_{A1}, d_{A2}, d_{A3}, d_{A4}\}$ at the reduced and maximum power.

SAR Test Distance from the **Bottom** SIDE

= **minimum** $\{d_{A1}, d_{A2}, d_{A3}, d_{A4}\} - 1\text{mm}$

= **minimum** $\{6,6,6,6\} - 1\text{ mm}$

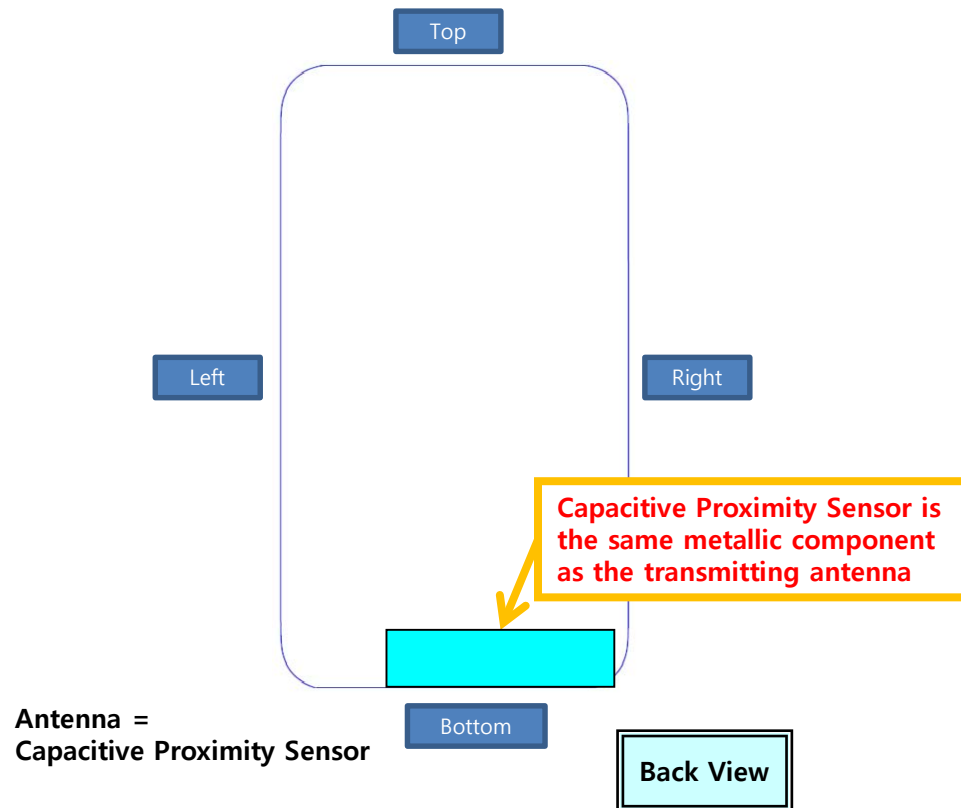
= **5 mm**

IV. Antenna & Sensor Coverage

According to FCC KDB 616217 6.3, if the proximity sensors are not designed to cover the entire rear surface of the Mobile, the sensing regions are limited and are spatially offset from the antenna.

However, this device uses a capacitive proximity sensor that is same metallic component as the transmitting antenna to facilitate triggering in any conditions the user may use the device in proximity of the antenna in the device.

Therefore, no further sensor coverage assessments were required according to KDB 616217 D04 v01 r02.

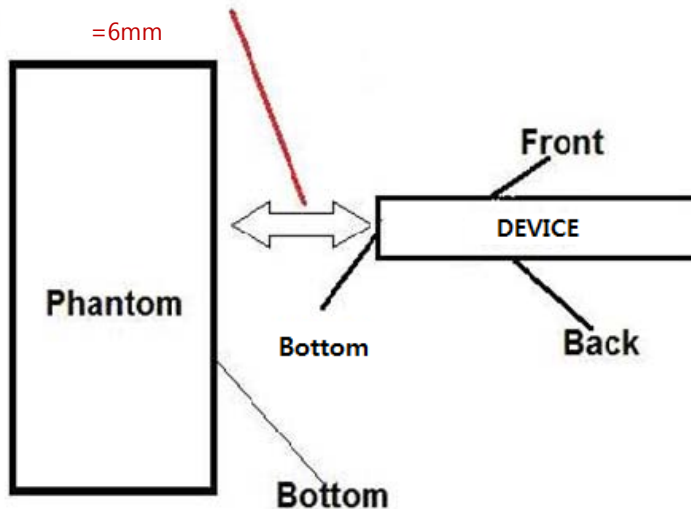


V. Procedure for determining device Tilt Angle Influences to Proximity Sensor triggering Bottom Edge

1. The influence of table tilt angles to proximity sensor triggering is determined by positioning each tablet edge that contains a transmitting antenna, perpendicular to the flat phantom, at the smallest sensor triggering test distance determined in sections 6.2 and 6.3 by rotating the tablet around the edge in $\leq 10^\circ$ increments until the tablet is $\pm 45^\circ$ or more from the vertical position at 0° per KDB 616217 6.4.a

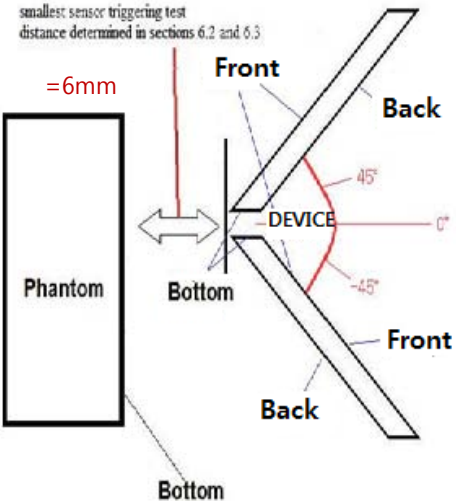
| KDB 616217 6.4.a Measured Power [dBm] | |
|------------------------------------------|------|
| Tilt Angle[°] | 0 |
| WCDMA B4 | 21.2 |
| WCDMA B2 | 20.5 |
| LTE B2 | 22.1 |
| LTE B4 | 21.9 |
| LTE B66 | 21.9 |

smallest sensor triggering test
distance determined in sections 6.2 and 6.3



V. Procedure for determining device Tilt Angle Influences to Proximity Sensor triggering Bottom Edge(CONT'D)

1. The influence of table tilt angles to proximity sensor triggering is determined by positioning each tablet edge that contains a transmitting antenna, perpendicular to the flat phantom, at the smallest sensor triggering test distance determined in sections 6.2 and 6.3 by rotating the tablet around the edge in $\leq 10^\circ$ increments until the tablet is $\pm 45^\circ$ or more from the vertical position at 0° per KDB 616217 6.4.a



Rotating the tablet around the edge in $\leq 10^\circ$ increments until the tablet is $\pm 45^\circ$ or more from the vertical position at 0° .
 \Rightarrow use 10° increments $-45^\circ, -35^\circ, -25^\circ, -15^\circ, -5^\circ, 5^\circ, 15^\circ, 25^\circ, 35^\circ, 45^\circ$.

| KDB 616217 6.4.a | | | | | | | | | | |
|----------------------|------|------|------|------|------|------|------|------|------|------|
| Measured Power [dBm] | | | | | | | | | | |
| Tilt Angle[°] | -45 | -35 | -25 | -15 | -5 | 5 | 15 | 25 | 35 | 45 |
| WCDMA B4 | 21.2 | 21.1 | 21.0 | 21.2 | 21.1 | 21.0 | 21.1 | 21.0 | 21.2 | 21.1 |
| WCDMA B2 | 20.5 | 20.4 | 20.6 | 20.5 | 20.5 | 20.7 | 20.6 | 20.4 | 20.5 | 20.5 |
| LTE B2 | 22.1 | 22.4 | 22.6 | 22.5 | 22.4 | 22.6 | 22.4 | 22.6 | 22.5 | 22.4 |
| LTE B4 | 21.9 | 22.0 | 21.9 | 22.1 | 22.0 | 21.9 | 22.0 | 21.9 | 22.1 | 22.0 |
| LTE B66 | 21.9 | 21.8 | 21.7 | 21.9 | 21.8 | 21.7 | 21.8 | 21.7 | 21.9 | 21.8 |