Appendix H. – Power reduction verification

Per the May 2017 TCBC Workshop notes, demonstration of proper functioning of the power reduction mechanism is required to support the corresponding SAR Configurations.

Procedures for determining proximity sensor triggering distances

(KDB 616217 D04v01r02 § 6.2)

The distance verification procedure was performed according to the following procedure:

1. A base station simulator was used to establish an RF connection and to monitor the power levels. The device being tested was placed below the relevant section of the phantom with the relevant side or edge of the device facing toward the phantom. For Licensed modes, Radio SAR Index(RSI) on the device UI was monitored to determine the triggering state.
2. The device was moved toward and away from the phantom to determine the distance at which the mechanism triggers and the output power is reduced, per KDB Publication 616217 D04v01r02.Each applicable test position was evaluated. The distance was conformed to be the same or larger (more conservative) than the minimum distances provided by the manufacturer.
3. Step 1 and 2 were repeated for the relevant modes, as appropriate
4. Steps1 through 3 were repeated for all distance-based power reduction mechanisms.

For detailed measurement conducted power results, please refer to the Section .11

SAR Test Configuration

Since the Dedicated Host Approach is applied, the standalone SAR test exclusion procedure in KDB447498 4.3.1 is applied in conjunction with KDB 616217 4.3 to determine the minimum test separation distance:

When the separation distance from the antenna to an adjacent edge is ≤ 50 mm, a distance of 50 mm is applied to determine SAR test exclusion.

When the separation distance from the antenna to an adjacent edge is > 50 mm, the actual antenna-to-edge separation distance is applied to determine SAR test exclusion

Antenna	Band	Device Conifigurations for SAR Testing				
		Rear	Top	Left	Right	Bottom
WiFi 1	2.4 ㎓ WLAN / Bluetooth	Yes	Yes	No	Yes	No
WiFi 1	5 ㎓ WLAN	Yes	Yes	No	Yes	No
WiFi 2	2.4 ㎓ WLAN	Yes	Yes	Yes	No	No
WiFi 2	5 ㎓ WLAN	Yes	Yes	Yes	No	No

- Note: All test configurations are based on front view.

Antennas <50mm to adjacent edges: According to KDB 447498 D01v06, if the calculated threshold value >3 then SAR test is required.
Antennas >50mm to adjacent edges: According to KDB 447498 D01v06, if the power threshold is less than the output power, SAR is required.
Per FCC KDB 447498 D01v06, The SAR exclusion threshold for distance < 50 mm is defined by the following equation:

$$\frac{MaxPowerofChannel(mW)}{TestSeparationDistance(mm)} * \sqrt{Frequency(GHz)} \leq 3.0(1\text{g SAR}), 7.5(10\text{g SAR})$$

Antennas >50mm to adjacent edges: According to KDB 447498 D01v06, if the power threshold is less than the output power , SAR is required.

Per KDB 447498 D01v06 Sec 4.3.1 b) For 100 MHz to 6 GHz and test separation distances > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B)
1) {[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm) · (f(MHz)/150)]} mW, for 100 MHz to 1500 MHz
2) {[Power allowed at numeric threshold for 50 mm in step a)] + [(test separation distance – 50 mm) · 10]} mW, for > 1500 MHz and ≤ 6 GHz

Per FCC KDB Publication 616217 D04v01r02, the rear surface and edges of tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR Exclusion Threshold in 447498 D04 v06 can be applied to determine SAR test exclusion for adjacent edge configurations. The closet distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

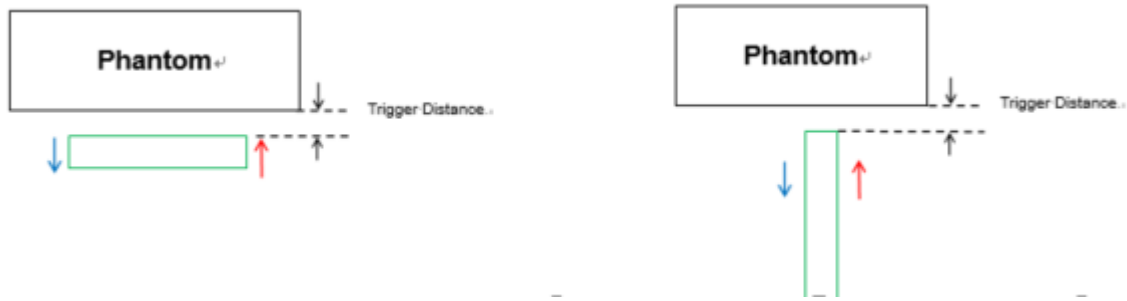
This device was tested considering the Rear/left/right/top/bottom side for simultaneous transmission analysis of multiple transmitter conditions. The bottom side of the upper antenna and the top surface of the lower antenna excluded according to FCC KDB 616217 D04v01r02.

1. Power Reduction Verification for WIFI 1 Ant (Grip #1)

Mechanism	Mode/Band	Radio SAR Index	
Mechanism 1st		Free	1st
Grip #1	2.4GHz 802.11b	0	1
Grip #1	2.4GHz 802.11g	0	1
Grip #1	2.4GHz 802.11n	0	1
Grip #1	2.4GHz 802.11ax	0	1
Grip #1	2.4GHz Bluetooth	0	1
Grip #1	2.4GHz Bluetooth LE	0	1
Grip #1	5GHz 802.11a	0	1
Grip #1	5GHz 802.11n 20MHz	0	1
Grip #1	5GHz 802.11ac 20MHz	0	1
Grip #1	5GHz 802.11ax 20MHz	0	1
Grip #1	5GHz 802.11n 40MHz	0	1
Grip #1	5GHz 802.11ac 40MHz	0	1
Grip #1	5GHz 802.11ax 40MHz	0	1
Grip #1	5GHz 802.11ac 80MHz	0	1
Grip #1	5GHz 802.11ax 80MHz	0	1

Note: This device uses different Radio SAR Index(RSI) to configure different time averaged power level based on certain exposure scenarios. For this model, RSI=1 represents the case when the grip sensor #1 is active, and RSI=0 represents the case where the device cannot detect the use condition.

1.1 Proximity sensor triggering Distance Verification.



Proximity Sensor Trigger Distance Assessment KDB 616217 D04 § 6.2 (Rear / Top / Right side)

LEGEND

→ Direction of DUT travel for determination of power reduction triggering point

→ Direction of DUT travel for determination of full power resumption triggering point

Tissue simulating liquid	Trigger distance Rear		Trigger distance -Bottom		Trigger distance -Right	
	Moving toward phantom [mm]	Moving away from phantom [mm]	Moving toward phantom [mm]	Moving away from phantom [mm]	Moving toward phantom [mm]	Moving away from phantom [mm]
2450MHz	19	25	19	25	11	17
5000MHz	19	25	19	25	11	17

Distance Measurement verification for Proximity sensor

Rear side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	24	23	22	21	20	19	18	17	16	15
2.4GHz 802.11b	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11g	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11n	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11ax	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz Bluetooth	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz Bluetooth LE	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11a	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11n 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11n 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 80MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 80MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced

Rear side – EUT Moving away (Release) from the Phantom

Distance[mm]	Distance to DUT Output power (dBm)									
	21	22	23	24	25	26	27	28	29	30
2.4GHz 802.11b	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11g	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11n	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11ax	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz Bluetooth	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz Bluetooth LE	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11a	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11n 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11n 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 80MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 80MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max

Based on the most conservative measured triggering distance of 19mm, additional Body SAR measurements were required at 18mm from rear side for the above modes.

Top side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	24	23	22	21	20	19	18	17	16	15
2.4GHz 802.11b	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11g	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11n	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11ax	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz Bluetooth	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz Bluetooth LE	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11a	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11n 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11n 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 80MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 80MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced

Top side – EUT Moving away (Release) from the Phantom

Distance[mm]	Distance to DUT Output power (dBm)									
	21	22	23	24	25	26	27	28	29	30
2.4GHz 802.11b	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11g	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11n	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11ax	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz Bluetooth	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz Bluetooth LE	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11a	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11n 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11n 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 80MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 80MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max

Based on the most conservative measured triggering distance of 19mm, additional Body SAR measurements were required at 18mm from bottom side for the above modes.

Right side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	16	15	14	13	12	11	10	9	8	7
2.4GHz 802.11b	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11g	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11n	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11ax	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz Bluetooth	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz Bluetooth LE	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11a	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11n 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11n 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 80MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 80MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced

Right side – EUT Moving away (Release) from the Phantom

Distance[mm]	Distance to DUT Output power (dBm)									
	13	14	15	16	17	18	19	20	21	22
2.4GHz 802.11b	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11g	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11n	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11ax	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz Bluetooth	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz Bluetooth LE	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11a	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11n 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11n 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 80MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 80MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max

Based on the most conservative measured triggering distance of 11mm, additional Body SAR measurements were required at 10mm from Right side for the above modes.

1.2 Proximity Sensor Coverage for SAR measurements

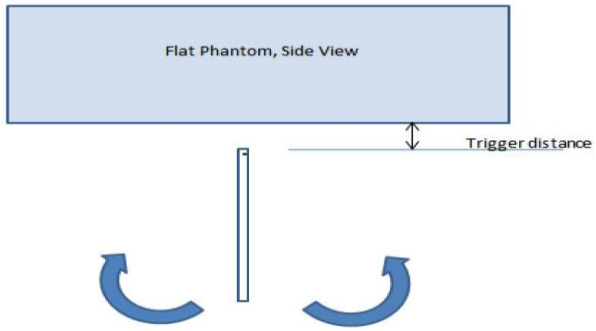
(KDB 616217 D04v01r02 § 6.3)

As there is no spatial offset between the antenna and the proximity sensor element, proximity sensor coverage did not need to be assessed.

1.3 Proximity Sensor Tilt Angle Assessment

(KDB 616217 D04v01r02 § 6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Bottom side parallel to the base of the flat phantom for each band. The EUT was rotated about Bottom side for angles up to ±45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up ±45°.



Proximity sensor tilt angle assessment (Top side) KDB 616217 § 6.4

Summary of Tablet Tilt Angle influence to Proximity Sensor Triggering (Top side)

Band (MHz)	Minimum distance at which power reduction was maintained over-45°	Power reduction status										
		-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
2450 MHz	19 mm	On	On	On	On	On	On	On	On	On	On	On
5000 MHz	19 mm	On	On	On	On	On	On	On	On	On	On	On

1.4 Resulting test positions for Body SAR measurements

Wireless technologies	Position	§ 6.2 Triggering Distance [mm]	§ 6.3 Coverage	§ 6.4 Tilt Angle	Worst case distance for Body SAR [mm]
WIFI 1 Ant	Rear	19	N/A	N/A	18
	Top	19	N/A	N/A	18
	Right	11	N/A	N/A	10

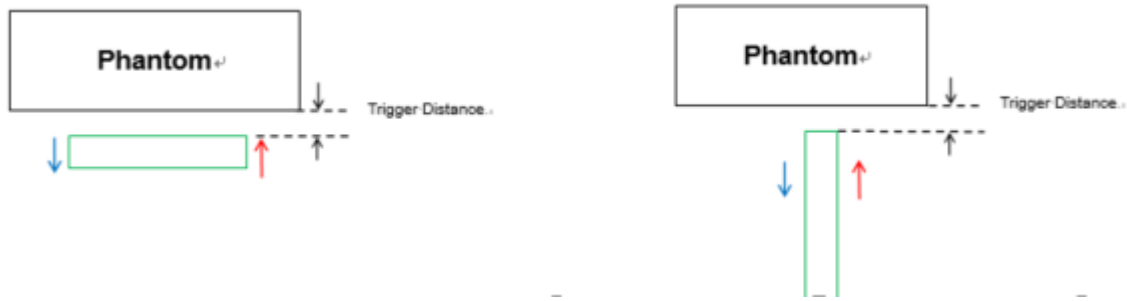
Note: FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device when being used in use conditions.

2. Power Reduction Verification for WIFI 2 Ant (Grip #2)

Mechanism	Mode/Band	Radio SAR Index	
Mechanism 1st		Free	1st
Grip #2	2.4GHz 802.11b	0	2
Grip #2	2.4GHz 802.11g	0	2
Grip #2	2.4GHz 802.11n	0	2
Grip #2	2.4GHz 802.11ax	0	2
Grip #2	5GHz 802.11a	0	2
Grip #2	5GHz 802.11n 20MHz	0	2
Grip #2	5GHz 802.11ac 20MHz	0	2
Grip #2	5GHz 802.11ax 20MHz	0	2
Grip #2	5GHz 802.11n 40MHz	0	2
Grip #2	5GHz 802.11ac 40MHz	0	2
Grip #2	5GHz 802.11ax 40MHz	0	2
Grip #2	5GHz 802.11ac 80MHz	0	2
Grip #2	5GHz 802.11ax 80MHz	0	2

Note: This device uses different Radio SAR Index(RSI) to configure different time averaged power level based on certain exposure scenarios. For this model, RSI=2 represents the case when the grip sensor #2 is active, and RSI=0 represents the case where the device cannot detect the use condition.

2.1 Proximity sensor triggering Distance Verification.



Proximity Sensor Trigger Distance Assessment KDB 616217 D04 § 6.2 (Rear / Top / Left side)

LEGEND

→ Direction of DUT travel for determination of power reduction triggering point

→ Direction of DUT travel for determination of full power resumption triggering point

Tissue simulating liquid	Trigger distance Rear		Trigger distance -Bottom		Trigger distance -Left	
	Moving toward phantom [mm]	Moving away from phantom [mm]	Moving toward phantom [mm]	Moving away from phantom [mm]	Moving toward phantom [mm]	Moving away from phantom [mm]
2450MHz	19	25	19	25	11	17
5000MHz	19	25	19	25	11	17

Distance Measurement verification for Proximity sensor

Rear side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	24	23	22	21	20	19	18	17	16	15
2.4GHz 802.11b	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11g	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11n	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11ax	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11a	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11n 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11n 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 80MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 80MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced

Rear side – EUT Moving away (Release) from the Phantom

Distance[mm]	Distance to DUT Output power (dBm)									
	21	22	23	24	25	26	27	28	29	30
2.4GHz 802.11b	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11g	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11n	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11ax	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11a	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11n 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11n 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 80MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 80MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max

Based on the most conservative measured triggering distance of 19mm, additional Body SAR measurements were required at 18mm from rear side for the above modes.

Top side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	24	23	22	21	20	19	18	17	16	15
2.4GHz 802.11b	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11g	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11n	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11ax	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11a	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11n 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11n 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 80MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 80MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced

Top side – EUT Moving away (Release) from the Phantom

Distance[mm]	Distance to DUT Output power (dBm)									
	21	22	23	24	25	26	27	28	29	30
2.4GHz 802.11b	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11g	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11n	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11ax	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11a	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11n 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11n 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 80MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 80MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max

Based on the most conservative measured triggering distance of 19mm, additional Body SAR measurements were required at 18mm from bottom side for the above modes.

Left side – EUT Moving toward (trigger) to the Phantom

Distance	Distance to DUT Output power (dBm)									
	16	15	14	13	12	11	10	9	8	7
2.4GHz 802.11b	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11g	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11n	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
2.4GHz 802.11ax	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11a	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11n 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 20MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11n 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 40MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ac 80MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced
5GHz 802.11ax 80MHz	Max	Max	Max	Max	Max	Reduced	Reduced	Reduced	Reduced	Reduced

Left side – EUT Moving away (Release) from the Phantom

Distance[mm]	Distance to DUT Output power (dBm)									
	13	14	15	16	17	18	19	20	21	22
2.4GHz 802.11b	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11g	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11n	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
2.4GHz 802.11ax	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11a	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11n 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 20MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11n 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 40MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ac 80MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max
5GHz 802.11ax 80MHz	Reduced	Reduced	Reduced	Reduced	Reduced	Max	Max	Max	Max	Max

Based on the most conservative measured triggering distance of 11mm, additional Body SAR measurements were required at 10mm from Left side for the above modes.

2.2 Proximity Sensor Coverage for SAR measurements

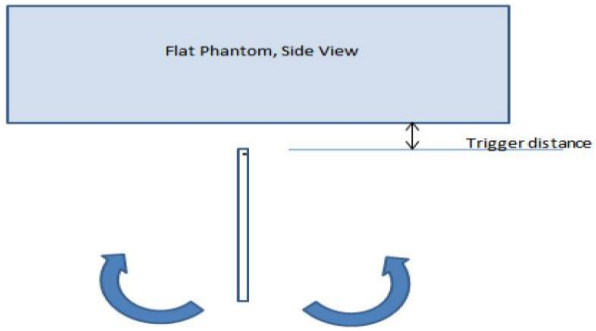
(KDB 616217 D04v01r02 § 6.3)

As there is no spatial offset between the antenna and the proximity sensor element, proximity sensor coverage did not need to be assessed.

2.3 Proximity Sensor Tilt Angle Assessment

(KDB 616217 D04v01r02 § 6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Bottom side parallel to the base of the flat phantom for each band. The EUT was rotated about Bottom side for angles up to ±45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up ±45°.



Proximity sensor tilt angle assessment (Top side) KDB 616217 § 6.4

Summary of Tablet Tilt Angle influence to Proximity Sensor Triggering (Top side)

Band (MHz)	Minimum distance at which power reduction was maintained over-45°	Power reduction status										
		-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
2450 MHz	19 mm	On	On	On	On	On	On	On	On	On	On	On
5000 MHz	19 mm	On	On	On	On	On	On	On	On	On	On	On

2.4 Resulting test positions for Body SAR measurements

Wireless technologies	Position	§ 6.2 Triggering Distance [mm]	§ 6.3 Coverage	§ 6.4 Tilt Angle	Worst case distance for Body SAR [mm]
WIFI 2 Ant	Rear	19	N/A	N/A	18
	Top	19	N/A	N/A	18
	Left	11	N/A	N/A	10

Note: FCC KDB Publication 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device when being used in use conditions.