APPENDIX F: POWER REDUCTION VERIFICATION

Per the May 2017 TCBC Workshop Notes, demonstration of proper functioning of the power reduction mechanisms is required to support the corresponding SAR configurations. The verification process included the evaluation of output power levels for individual or multiple triggering mechanisms.

F.1 Power Verification Procedure

The power verification was performed according to the following procedure:

1. A base station simulator was used to establish a conducted RF connection and the output power was monitored. The power measurements were confirmed to be within expected tolerances for all states before and after a power reduction mechanism was triggered.

2. Step 1 was repeated for all relevant modes and frequency bands for the mechanism being investigated.

3. Steps 1 and 2 were repeated for all individual power reduction mechanisms and combinations thereof. For the combination cases, one mechanism was switched to a 'triggered' state at a time; powers were confirmed to be within tolerances after each additional mechanism was activated.

F.2 Main Antenna Verification Summary

Note: The device supports manufacturer's proprietary mechanism which can detect the motion of the device and then configure the DSI during portable use scenarios. Details of this mechanism can be found in the Operational Description. When the device is being used near the user, the device will detect motion and reduce the time-averaged output power. The motion detection operation was verified for on-body condition to represent conservative use cases for the device. The verification results are below.

This device uses different Device State Indices (DSI) to configure different time averaged power levels based on certain exposure scenarios. For this device DSI = 3 represents the case where the device detects no motion and DSI = 6 is configured when the device detects motion.

Table F-1
Power Measurement Verification for Main Antenna

Mode/Band	Device State Index (DSI)	
	No Motion (Max)	Motion (Reduced)
Low Band Ant 2	3	6
Low Band Ant 5	3	6
Mid Band Ant 1	3	6
High Band Ant 1	3	6
High Band Ant 6	3	6
Ultra High Band Ant 1	3	6
Ultra High Band Ant 6	3	6

Note:

1. Low band refers to: UMTS B5, LTE B5/12/13/14/26/71, NR n71/12/14/26/5; Mid band refers to: UMTS B2/4, LTE B2/4/25/66, NR n66/25/2; High band refers to: LTE B30/41, NR n30/41; Ultra High band refers to: LTE B48, NR n48/77
2. Antenna 3 and 4 could not be measured due to equipment limitations.

F.3 WIFI Verification Summary

Note: The device supports manufacturer's proprietary mechanism which can detect the motion of the device and then configure the power during portable use scenarios. Details of this mechanism can be found in the Operational Description. When the device is being used near the user, the device will detect motion and reduce the time-averaged output power. The motion detection operation was verified for on-body condition to represent conservative use cases for the device. The verification results are in the tables below.

This device uses different Device State Indices (DSI) to configure different time averaged power levels based on certain exposure scenarios. For this device DSI = 0 represents the case where the device detects no motion and DSI = 1 is configured when the device detects motion.
In the table below, the 'No Motion' state (DSI = 0) corresponds to Pmax.

Table F-2
Power Measurement Verification WIFI – 2.4/5/6 GHz WLAN

Mode/Band	Device State Index (DSI)	
	No Motion (Max)	Motion (Red)
2.4 GHz WLAN Chain 0	0	1
2.4 GHz WLAN Chain 1	0	1
5 GHz WLAN Chain 0	0	1
5 GHz WLAN Chain 1	0	1
6GHz WLAN Chain 0	0	1
6GHz WLAN Chain 1	0	1

*Note: MIMO WIFI mode was not evaluated due to equipment limitations.