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## ***Power reduction mechanism verification***

According to the May 2017 TCBC Workshop, Demonstration of proper functioning of the detection and triggering mechanisms is required to support the corresponding RF exposure conditions. The verification is through a base station simulator is used to establish a conducted RF connection and monitor output power under different operating conditions related to the power reduction mechanisms. Detail of power reduction mechanisms referring to Operational Description

### **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.

#### **General Note:**

1. This device uses different Device State Indices (DSI) to configure different time averaged power levels based on certain exposure scenarios. State = 1 represents the case where the device is held to ear, State = 4 represents the case when hotspot mode is active, State = 3 represents the case when Body-worn/extremity exposure condition and G-sensor on is active, full power represents the case is default power and G-sensor is not active.
  2. Select the bands with the largest power reduction for power verification:
    - a. Establish voice call and audio routed through the earpiece to monitor output power under head power states.
      - Tradition voice call for GSM/WCDMA, voice over IP CMRS operations for LTE
      - GSM850 is set to GPRS 1TX slot, LTE Band 7 is set at 'highest BW, 1RB, RB Offset = 0, QPSK', WCDMA II is set AMR 12.2Kbps, 5G FR1 n7 is set at highest BW, 1RB, RB offset = 1.
    - b. Establish data connection monitor hotspot power state.
      - GSM850 is set to GPRS 1TX slot, LTE Band 7 is set at 'highest BW, 1RB, RB Offset = 0, QPSK', WCDMA II is set RMC 12.2Kbps, 5G FR1 n7 is set at highest BW, 1RB, RB offset = 1.
      - Body Detect mechanism was performed for the in-hand and on a stationary object (placed on a table).
  3. In this power validation purpose is to demonstrate of proper functioning of the detection and triggering mechanisms to support the corresponding RF exposure conditions.
  4. Verification performed for one technology/Band to demonstrate that the power reduction applies for same technology/band and call origination.
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## 2. Verification output Power Results

### Head exposure conditions

Ear acoustic output Status:		OFF		ON	
Power state		WWAN State 3		WWAN State 1	
Wireless technology	Antenna	Measured (dBm)	Max. Tune-up (dBm)	Measured (dBm)	Max. Tune-up (dBm)
GSM850 (1 Tx slots)	Ant 0	31.99	32.50	28.11	29.00
WCDMA II	Ant 2	22.10	23.00	18.37	19.00
LTE Band 7	Ant 4	19.81	20.50	14.59	15.50
n77	Ant 2	19.83	20.50	13.34	14.50

### Hotspot exposure condition

Hotspot output Status:		OFF		ON	
Power state		WWAN State 3		WWAN State 4	
Wireless technology	Antenna	Measured (dBm)	Max. Tune-up (dBm)	Measured (dBm)	Max. Tune-up (dBm)
GSM850 (1 Tx slots)	Ant 0	31.99	32.50	30.93	31.50
WCDMA II	Ant 2	22.10	23.00	21.23	22.00
LTE Band 7	Ant 4	19.81	20.50	13.99	15.00
n77	Ant 2	19.83	20.50	18.25	19.00