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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 Exposure Condition Index (ECI) to configure different time averaged power levels based on certain exposure scenarios. ECI = 2 represents the case where the device is held to ear, ECI = 7 represents the case when hotspot mode is active, ECI = 4 represents the case is body and P-sensor is not active, ECI = 3 represents the case when Body-worn exposure condition and P-sensor on is active, and ECI = 6 represents the case when extremity exposure condition and P-sensor on is active.
    - a. Establish voice call and audio routed through the earpiece to monitor output power under head power states.
      - Voice over IP CMRS operations for LTE
      - LTE Band 42/7 is set at 'highest BW, 1RB, RB Offset = 0, QPSK'.
    - b. Establish data connection monitor hotspot power state.
      - LTE Band 2/42 is set at 'highest BW, 1RB, RB Offset = 0, QPSK'.
    - c. Establish data connection monitor body worn power state.
      - LTE Band 7/42 is set at 'highest BW, 1RB, RB Offset = 0, QPSK'.
      - Body Detect mechanism was performed for the in-hand and on a stationary object (placed on a table)
    - d. Establish data connection monitor extremity power state.
      - LTE Band 7/2 is set at 'highest BW, 1RB, RB Offset = 0, QPSK' WCDMA IV is set RMC 12.2Kbps.
      - Body Detect mechanism was performed for the in-hand and on a stationary object (placed on a table).
  2. In this power validation purpose is to demonstrate of proper functioning of the detection and triggering mechanisms to support the corresponding RF exposure conditions.
  3. 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

Head Exposure condition		Output Power for Voice Call			
Ear acoustic output Status:		ON		OFF	
Power state		WWAN Receiver on		WWAN Receiver off	
Wireless technology	Antenna	Measured (dBm)	Max. Tune-up (dBm)	Measured (dBm)	Max. Tune-up (dBm)
LTE Band 42	Ant 5	16.96	18.1	22.93	24.00
LTE Band 7	Ant 4	18.42	19.5	23.02	24.00

### Hotspot exposure condition

Hotspot exposure condition					
Wifi Hotspot Status		ON		OFF	
Power state		WWAN Hotspot on		WWAN Hotspot off	
		WiFi Standalone		WiFi Simultaneous	
Wireless Technology	Antenna	Measured (dBm)	Max. Tune-up (dBm)	Measured (dBm)	Max. Tune-up (dBm)
LTE Band 2	Ant 4	15.38	16.6	22.83	24.0
LTE Band 42	Ant5	14.99	16.1	23.05	24.0

### Body worn exposure condition

Body Worn exposure condition		Output Power (data connection)			
Power state		WWAN Sensor on		WWAN Sensor off	
Wireless Technology	Antenna	Measured (dBm)	Max. Tune-up (dBm)	Measured (dBm)	Max. Tune-up (dBm)
LTE Band 7	Ant 4	17.96	19.0	22.99	24.0
LTE Band 42	Ant 5	18.1	19.5	23.01	24.0

### Extremity exposure condition

Body Worn exposure condition		Output Power (data connection)			
Power state		WWAN Sensor on		WWAN Sensor off	
Wireless Technology	Antenna	Measured (dBm)	Max. Tune-up (dBm)	Measured (dBm)	Max. Tune-up (dBm)
LTE Band 7	Ant 4	18.65	19.8	22.87	24.0
LTE Band 2	Ant4	20.05	21.2	22.98	24.0