

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 as the following table:

DSI	Antenna No.	Trigger Conditions
DSI0	All Ant	Full power (sensor off)
DSI1	Ant 0	Sensor on Standalone
DSI2	Ant 7	Sensor on Standalone
DSI3	Ant 4	Sensor on Standalone
DSI4	Ant 6	Sensor on Standalone
DSI5	Ant 1	Sensor on Standalone
DSI6	Ant 0+7	Sensor on Simultaneous
DSI7	Ant 1+7	Sensor on Simultaneous
DSI8	Ant 0+1+7	Sensor on Simultaneous
DSI9	Ant 0+1	Sensor on Simultaneous
DSI10	Ant 1+4	Sensor on Simultaneous
DSI11	Ant 1+4+6	Sensor on Simultaneous
DSI12	Ant 0+1+4+6+7	Sensor on Simultaneous

2. Select the bands with the largest power reduction for power verification:
 - a. Establish data connection monitor hotspot power state.
 - LTE Band 14 is set at 'highest BW, 1RB, RB Offset = 0, QPSK', WCDMA IV is set RMC 12.2Kbps, 5G FR1 n78 is set at highest BW, 1RB, RB offset = 1.
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.

2. Verification output Power Results

Hotspot exposure condition

Sensor output Status:		OFF		ON	
Power state		WWAN DSI 0		WWAN DSI 1	
Wireless technology	Antenna	Measured (dBm)	Max. Tune-up (dBm)	Measured (dBm)	Max. Tune-up (dBm)
WCDMA IV	Ant 0	23.24	24.00	21.98	22.50
Sensor output Status:		OFF		ON	
Power state		WWAN DSI 0		WWAN DSI 3	
LTE Band 14	Ant 4	31.01	32.00	28.86	29.50
Sensor output Status:		OFF		ON	
Power state		WWAN DSI 0		WWAN DSI 5	
n78	Ant 1	25.57	27.00	22.62	24.00