

Appendix H. Power reduction mechanism verification

According to the May 2017 TCBC Workshop, Demonstration of proper functioning of the detection and triggering mechanisms 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

- Establish voice call and audio routed through the earpiece to monitor output power under head with simultaneous transmitting power states for GSM/UMST/LTE/FR1/WiFi
- Establish data connection monitor hotspot power state for GSM/UMST/LTE/FR1/WiFi
- Establish data connection monitor body worn power state for GSM/UMST/LTE/FR1/WiFi, Body Detect mechanism was performed for the in-hand and on a stationary object (placed on a table)
- This device incorporates the Smart Transmit algorithm feature and through under varying Tx power transmission scenarios in real-time to maintain the time-averaged Tx power compliant with RF exposure requirement.
- In this power validation purpose is to demonstrate of proper functioning of the detection and triggering mechanisms to support the corresponding RF exposure conditions. In order to avoid real-time TX power varying may affect monitor output power related to the power reduction mechanisms, therefore power reduction verification would be disabled WWAN time average SAR feature.
- Verification performed for each technology to demonstrate that the power reduction applies for both technology and call origination.

2. Test setup for measuring power



Figure 1

3. Verification output Power Results

Head exposure conditions

Head Exposure condition		Output Power for Voice Call			
Receiver acoustic output Status:		OFF		ON	
Power state		WWAN LAT/UAT Power Table 0		WWAN LAT Power Table 1 WWAN UAT Power Table 4	
Wireless technology	Antenna	Measured (dBm)	Max. Tune-up (dBm)	Measured (dBm)	Max. Tune-up (dBm)
GSM850 (4TX)	Ant 0	26.99	28.00	26.95	28.00
	Ant 1	25.97	27.50	22.01	23.50
UMTS Band 2	Ant 5	23.69	25.00	23.65	25.00
	Ant 2	24.03	25.00	17.42	18.50
LTE Band 12 (FDD)	Ant 0	23.97	25.00	23.91	25.00
	Ant 1	23.35	25.00	20.88	22.50
LTE Band 25 (FDD)	Ant 5	23.53	25.00	23.51	25.00
	Ant 2	24.08	25.00	18.52	19.50
	Ant 3	23.49	25.00	16.59	18.00
	Ant 4	22.01	23.50	17.04	18.50
NR SA n7	Ant 5	25.12	25.70	25.10	25.70
	Ant 2	25.46	25.70	16.93	17.20
	Ant 3	25.00	25.70	16.55	17.20
	Ant 4	23.13	24.50	17.15	18.50

Hotspot exposure condition

Hotspot exposure condition		Output Power for data connection			
Wifi Hotspot Status		OFF		ON	
Power state		WWAN LAT/UAT Power Table 0		WWAN LAT Power Table 2 WWAN UAT Power Table 5	
Wireless Technology	Antenna	Measured (dBm)	Max. Tune-up (dBm)	Measured (dBm)	Max. Tune-up (dBm)
GSM1900 (4TX)	Ant 5	23.70	24.00	23.72	24.00
	Ant 2	24.25	25.00	21.26	22.00
UMTS Band 2	Ant 5	23.69	25.00	23.65	25.00
	Ant 2	24.03	25.00	17.54	18.50
LTE Band 12 (FDD)	Ant 0	23.97	25.00	23.94	25.00
	Ant 1	23.35	25.00	20.86	22.50
LTE Band 25 (FDD)	Ant 5	23.53	25.00	23.50	25.00
	Ant 2	24.08	25.00	18.53	19.50
	Ant 3	23.49	25.00	16.62	18.00
	Ant 4	22.01	23.50	17.02	18.50
NR SA n7	Ant 5	25.12	25.70	25.13	25.70
	Ant 2	25.46	25.70	16.95	17.20
	Ant 3	25.00	25.70	16.51	17.20
	Ant 4	23.13	24.50	17.12	18.50

Extremity exposure condition

Body Worn exposure condition		Output Power (data connection)			
		Stationary		Extremity	
Sensor Status		OFF		ON	
Power state		WWAN LAT/UAT Power Table 0		WWAN LAT Power Table 3	
Wireless Technology	Antenna	Measured (dBm)	Max. Tune-up (dBm)	Measured (dBm)	Max. Tune-up (dBm)
Ant 0	LTE Band 5	25.06	25.70	24.03	24.70
	NR SA n5	25.21	23.70	24.22	24.70
Ant 1	WCDMA V	23.35	25.00	22.46	24.00
	LTE Band 5	23.31	25.70	22.55	23.70
	NR SA n5	24.35	25.00	21.93	23.00
Ant 3	LTE Band 7	24.70	25.70	20.35	21.20
	NR SA n7	25.14	25.70	20.54	21.20
Ant 4	LTE Band 7	22.59	24.00	19.88	21.00
	NR SA n7	23.18	24.50	19.51	21.00
Ant 6	LTE Band 42	25.12	25.70	18.58	19.00
	NR SA n77	23.17	23.50	16.06	16.50
Ant 7	LTE Band 42	24.59	25.70	19.22	19.80
	NR SA n78	23.56	24.50	17.02	17.50
Ant 8	LTE Band 42	23.32	24.50	21.26	22.30
	NR SA n78	22.35	23.50	18.70	19.50
Ant 9	LTE Band 48	21.21	22.00	20.24	20.80
	NR SA n77	20.80	22.00	16.09	17.00