

Appendix F. Power reduction mechanism verification

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 exposure condition
- Establish data connection monitor body worn power state.
 - Body Detect mechanism was performed for the in-hand and on a stationary object (placed on a table)
- In this power validation purpose is to demonstrate of proper functioning of the detection and triggering mechanisms to support the corresponding RF exposure conditions.
- 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 condition

Head exposure condition		DBS mode_ Output Power	
Wireless technology	Antenna	Measured	Target power(dBm)
		(dBm)	
802.11b 1Mbps CH6	(Ant6+7)Ant 6	19.04	19.0 ±1.5db
	(Ant6+7)Ant 7	19.12	19.0 ±1.5db

Head exposure condition		DBS mode_ Output Power	
Wireless technology	Antenna	Measured	Target power(dBm)
		(dBm)	
802.11a 6Mbps CH56	(Ant6+7)Ant 6	18.53	18.0 ±1.5db
	(Ant6+7)Ant 7	18.46	18.0 ±1.5db

Hotspot exposure condition

Hotspot exposure condition		Output Power	
Wireless technology	Antenna	Measured	Target power(dBm)
		(dBm)	
802.11b 1Mbps CH6	(Ant6+7)Ant 6	18.1	18.0 ±1.5db
	(Ant6+7)Ant 7	18.2	18.0 ±1.5db

Hotspot exposure condition		Output Power	
Wireless technology	Antenna	Measured	Target power(dBm)
		(dBm)	
802.11a 6Mbps CH157	(Ant6+7)Ant 6	17.01	16.0±1.5db
	(Ant6+7)Ant 7	17.02	16.0±1.5db

Body worn exposure condition

Display on:

Body exposure condition		Output Power (data connection)			
		G-Sensor status			
		Sensor Off		Sensor On	
Wireless technology	Antenna	Measured	Target power(dBm)	Measured	Target power(dBm)
		(dBm)		(dBm)	
802.11a 6Mbp CH157	(Ant6+7)Ant 6	19.92	18.5±1.5db	16.82	16.0±1.5db
	(Ant6+7)Ant 7	19.93	18.5±1.5db	16.73	16.0±1.5db

Body exposure condition		Output Power (data connection)			
		G-Sensor status			
		Sensor Off		Sensor On	
Wireless technology	Antenna	Measured	Target power(dBm)	Measured	Target power(dBm)
		(dBm)		(dBm)	
802.11ax40 MCS0 CH3	(Ant6+7)Ant 6	15.2	16.5 ±1.5db	12.19	12.0 ±1.5db
	(Ant6+7)Ant 7	15.3	16.5 ±1.5db	12.34	12.0 ±1.5db

Display on to off:

Body exposure condition		Output Power (data connection)			
		G-Sensor status			
Power state		Sensor Off		Sensor On	
Wireless technology	Antenna	Measured	Target power(dBm)	Measured	Target power(dBm)
		(dBm)		(dBm)	
802.11a 6Mbps CH157	(Ant6+7)Ant 6	16.74	16.0±1.5db	16.82	16.0±1.5db
	(Ant6+7)Ant 7	16.72	16.0±1.5db	16.93	16.0±1.5db

Body exposure condition		Output Power (data connection)			
		G-Sensor status			
Power state		Sensor Off		Sensor On	
Wireless technology	Antenna	Measured	Target power(dBm)	Measured	Target power(dBm)
		(dBm)		(dBm)	
802.11ax40 MCS0 CH3	(Ant6+7)Ant 6	12.18	12.0 ±1.5db	12.13	12.0 ±1.5db
	(Ant6+7)Ant 7	12.15	12.0 ±1.5db	12.14	12.0 ±1.5db

Note: When the Display is off, the power will remain at the reduce power level.

Body detect validation:

- Body Detect mechanism will be performed for the in-hand and on a stationary object (placed on a table).
- Verify the functionality of the motion sensor by measuring the output power in the following steps.

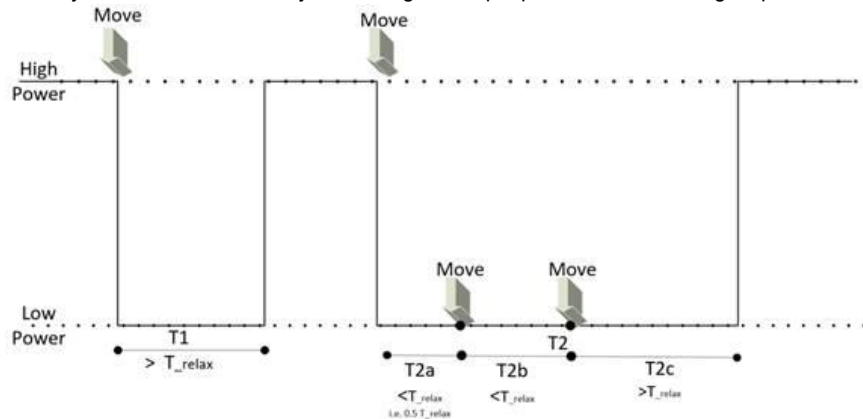


Figure 1 Illustration of the procedure for the validation of the power reduction

The device is embedded with motion sensors only, no proximity sensors are installed.

- Placed on a table:** Make the DUT transmit with the maximum output power by using a base station simulator.
 - Confirm that motion sensor is not triggered by letting the DUT remain stationary with no movements for the period T_{relax} for the motion sensor to reach stationary state.
 - Record P_{step1} (high power)
- In-hand:** Move the DUT to trigger the motion sensor. Apply the motion of the DUT with respect to movements in intended and reasonably foreseeable use conditions of the DUT.
 - Record P_{step2} (low power)
- For the validation of T_{relax} , wait a time period $T_1 > T_{relax}$ and confirm DUT restores to high power (P_{step1}).
- Move the DUT to trigger the motion sensor.
- Move DUT within T_{relax} to ensure T_{relax} resets when DUT is in motion.
DUT can be moved once or twice within T_{relax} , (after time periods T_{2a} and T_{2b} in Figure 1.) followed by waiting for a time period greater than T_{relax} (time period T_{2c} in Figure 1.) for DUT to restore high power. The total time duration of this step is T_2 , and the power during the whole period T_2 shall be reduced (low power – P_{step2}).

T_{relax} : 60 sec

Monitor period, T_1 : 70 sec, T_{2a} : 30 sec, T_{2b} : 30 sec, T_{2c} : 70 sec

Exposure Condition		Output Power (data connection) (dBm)											
		Stationary Placed on a table		In hand		Stationary Placed on a table		In hand			Stationary Placed on a table		
Power state		Full Power P_{step1}		Low Power P_{step2}		Full Power $P_{\text{step1}} \text{ \& } T_1 > T_{\text{relax}}$		Low Power $P_{\text{step2}} \text{ \& } T_{2a} < T_{\text{relax}}$		Low Power $P_{\text{step2}} \text{ \& } T_{2b} < T_{\text{relax}}$		Full Power $P_{\text{step1}} \text{ \& } T_{2c} > T_{\text{relax}}$	
Wireless technology	Antenna	Measured	Max. Tune-up	Measured	Max. Tune-up	Measured	Max. Tune-up	Measured	Max. Tune-up	Measured	Max. Tune-up	Measured	Max. Tune-up
802.11a 6Mbps CH157	(Ant6+7) Ant 6	19.9	18.5 ±1.5db	16.74	16.0 ±1.5db	19.86	18.5 ±1.5db	16.75	16.0 ±1.5db	16.78	16.0 ±1.5db	17.92	18.5 ±1.5db
	(Ant6+7) Ant 7	19.85	18.5 ±1.5db	16.76	16.0 ±1.5db	19.82	18.5 ±1.5db	16.72	16.0 ±1.5db	16.74	16.0 ±1.5db	17.96	18.5 ±1.5db