

SAR Simultaneous Transmission Analysis

FCC ID: 2A9LJ-CIAO

1.1. Simultaneous Transmission Conclusion

Multi-Band Simultaneous Transmission Considerations

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. Possible transmission paths for the EUT are shown in below Figure and are color-coded to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.



Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D01v06, simultaneous transmission SAR test exclusion may be applied when the sum of the 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤ 1.6 W/kg. When standalone SAR is not required to be measured, per FCC KDB 447498 D01v06, the following equation must be used to estimate the standalone 1g SAR and 10g extremity SAR for simultaneous transmission assessment involving that transmitter.

$$\text{Estimated SAR} = \frac{\sqrt{f(\text{GHz})}}{7.5(18.75)} \cdot \frac{\text{Max. power of channel, mW}}{\text{Min. Separation Distance, mm}}$$

Mode	Max. tune-up Power (dBm)	Exposure Position	Head	Body -worn
		Test Distance (mm)	5	5
BT	-0.50	Estimated SAR (W/kg)	/	0.17

Note:

- When the minimum *test separation distance* is < 5 mm, a distance of 5 mm according is applied to determine estimated SAR.
- (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm) $\cdot [\sqrt{f(\text{GHz})}/x]$ W/kg for test separation distances ≤ 5 mm; where $x = 7.5$ for 1-g SAR, and $x = 18.75$ for 10-g SAR.
- Next to the mouth exposure requires 1-g SAR, and the wrist-worn condition requires 10-g extremity SAR.

Simultaneous Transmission Possibilities

The Simultaneous Transmission Possibilities of this device are as below:

NO.	Configuration	Head	Body-Worn	Hotspot
1	BT+WIFI-0	NO	YES	NO
2	BLE+WIFI-0	NO	YES	NO
3	WIFI-0+WIFI-1	NO	YES	NO

1.2. SAR Simultaneous Transmission Analysis

Band	Test Position	Scaled SAR						Σ SAR (W/kg)	SPLSR	Remark
		WIFI (2.4G) -0	WIFI (5G) -0	BT	WIFI (2.4G) -1	WIFI (5G) -1	WIFI6E			
Body-Worn	Front	0.20	0.16	0.17	0.13	0.13	0.024	0.37	N/A	N/A
	Back	0.39	0.28	0.17	0.27	0.23	0.127	0.66	N/A	N/A
	Right	0.02	0.02	0.17	0.02	0.02	0.093	0.19	N/A	N/A
	Top	0.02	0.02	0.17	0.02	0.02	0.028	0.19	N/A	N/A

1.3. SAR and PD Simultaneous Transmission Analysis

Band	Test Position	Scaled SAR						Σ	SPLSR	Remark
		WIFI (2.4G) -0	WIFI (5G) -0	BT	WIFI (2.4G) -1	WIFI (5G) -1	PD			
Body-Worn	Front	0.20	0.16	0.17	0.13	0.13	2.358	2.558	N/A	N/A
	Back	0.39	0.28	0.17	0.27	0.23	5.565	5.955	N/A	N/A
	Right	0.02	0.02	0.17	0.02	0.02	3.897	4.067	N/A	N/A
	Top	0.02	0.02	0.17	0.02	0.02	3.440	3.610	N/A	N/A

Note : WIFI 6E data reference TCWA24060010403_FCC SAR Test Report