

FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

Simultaneous Transmission Capabilities

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.

Table 1. Simultaneous Transmission Scenarios

No.	Capable TX Configuration	GSM 850/1900 (Voice)	GPRS/EDGE 850/1900 (Data)	WCDMA B5/B4/B2 (Voice)	WCDMA B5/B4/B2 (Data)	LTE B12/B13/B14/B17 /B5/B4/B2/B41	WiFi 2.4GHz 802.11b/g/n/ac	WiFi 5GHz 802.11a/n/ac	Bluetooth 2.4GHz Mobile Computer	RFID 900MHz	Bluetooth 2.4GHz RFID/USN Wireless Device
1	GSM 850/1900 (Voice)		No	No	No	No	Yes	Yes	Yes	Yes	Yes
2	GPRS/EDGE 850/1900 (Data)	No		No	No	No	Yes	Yes	Yes	Yes	Yes
3	WCDMA B5/B4/B2 (Voice)	No	No		No	No	Yes	Yes	Yes	Yes	Yes
4	WCDMA B5/B4/B2 (Data)	No	No	No		No	Yes	Yes	Yes	Yes	Yes
5	LTE B12/B13/B14/B17 /B5/B4/B2/B41	No	No	No	No		Yes	Yes	Yes	Yes	Yes
6	WiFi 2.4GHz 802.11b/g/n/ac	Yes	Yes	Yes	Yes	Yes		Yes	No	Yes	Yes
7	WiFi 5GHz 802.11a/n/ac	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
7	Bluetooth 2.4GHz Mobile Computer	Yes	Yes	Yes	Yes	Yes	No	Yes		Yes	Yes
8	RFID 900MHz	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
9	Bluetooth 2.4GHz RFID/USN Wireless Device	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

Table 2. Simultaneous SAR Cases

No.	Capable Transmit Configuration	Extremity SAR	Note
1	GSM Voice + Wi-Fi 2.4 GHz	Yes	
2	GSM Voice + Wi-Fi 5 GHz	Yes	
3	GSM Voice + Bluetooth 2.4 GHz	Yes	
4	GSM Voice + Bluetooth 2.4 GHz + Wi-Fi 5GHz	Yes	
5	GSM Voice + Bluetooth 2.4 GHz + Wi-Fi 5GHz + RFID	Yes	
6	GSM Voice + Bluetooth 2.4 GHz + Wi-Fi 5GHz + RFID + Bluetooth 2.4 GHz	Yes	
7	WCDMA + Wi-Fi 2.4 GHz	Yes	
8	WCDMA + Wi-Fi 5 GHz	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
9	WCDMA + Bluetooth 2.4 GHz	Yes	
10	WCDMA + Bluetooth 2.4 GHz + Wi-Fi 5GHz	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
11	WCDMA + Bluetooth 2.4 GHz + Wi-Fi 5GHz + RFID	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
12	WCDMA + Bluetooth 2.4 GHz + Wi-Fi 5GHz + RFID + Bluetooth 2.4 GHz	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
13	LTE + Wi-Fi 2.4 GHz	Yes	
14	LTE + Wi-Fi 5 GHz	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
15	LTE + Bluetooth 2.4 GHz	Yes	
16	LTE + Bluetooth 2.4 GHz + Wi-Fi 5GHz	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
17	LTE + Bluetooth 2.4 GHz + Wi-Fi 5GHz + RFID	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
18	LTE + Bluetooth 2.4 GHz + Wi-Fi 5GHz + RFID + Bluetooth 2.4 GHz	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
19	GPRS/EDGE + Wi-Fi 2.4 GHz	Yes	
20	GPRS/EDGE + Wi-Fi 5 GHz	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
21	GPRS/EDGE + Bluetooth 2.4 GHz	Yes	
22	GPRS/EDGE + Bluetooth 2.4 GHz + Wi-Fi 5GHz	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
23	GPRS/EDGE + Bluetooth 2.4 GHz + Wi-Fi 5GHz + RFID	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
24	GPRS/EDGE + Bluetooth 2.4 GHz + Wi-Fi 5GHz + RFID + Bluetooth 2.4 GHz	Yes	* Hotspot of UNII-1 & UNII-3 can be operated simultaneous transmission.
Notes:			
1. Bluetooth and WiFi can not transmit simultaneously at 2.4G band.			
2. GSM, WCDMA and LTE can not transmit simultaneously since they share the same chip.			